CONSEIL PERMANENT INTERNATIONAL POUR
L'EXPLORATION DE LA MER
CHARLOTTENLUND SLOT — DANEMARK

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RAPPORTS
ET
PROCÈS-VERBAUX DES RÉUNIONS

VOLUME CXXX

1970

1ÈRE PARTIE
PROCÈS-VERBAUX
(OCTOBRE — 1951)

2ÈME PARTIE
RAPPORT ADMINISTRATIF
(1950)

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TRENTE-NEUVIÈME RÉUNION

AMSTERDAM — OCTOBRE 1951

BUREAU DU CONSEIL:

Président:
M. le Dr. K. A. Andersson.

Premier Vice-Président:
M. A. T. A. Dobson.

Vice-Présidents:

M. G. J. Lienesch.

M. le Dr. A. Ramalho
jusqu'au 1 Octobre.

M. le Professeur J. le Gall.

M. le Professeur H. U. Sverdrup
à partir du 1 Octobre.

DÉLÉGUÉS:

Belgique:

*M. H. de Vos;
Directeur Général de la Marine;
90, Rue de la Loi, Bruxelles, substitué par
M. le Dr. E. Leloup, Institut des Études Maritimes,
Rue Vautier, 31, Bruxelles.

Danemark:

M. le Dr. Å. V. Tåning;
Directeur de la Station Biologique Danoise et du Laboratoire Marine-biologique, Membre de la Commission Danoise pour l'Exploration de la Mer;
Charlottenlund Slot, Charlottenlund.
M. le Dr. P. Jespersen[1];
Membre de la Commission Danoise pour l'Exploration de la Mer, Laboratoire Planctonique;
Charlottenlund Slot, Charlottenlund.
M. le Dr. Paul M. Hansen;
Grønlands Fiskeriundersøgelser,
Charlottenlund Slot, Charlottenlund. (Suppléant.)

Espagne:

*M. le Contre-Amiral Rafael Garcia-Rodriguez;
Directeur de l'Institut Espagnol d'Océanographie;
Alcalá 27, Madrid, substitué par
M. le Dr. José Mª Navaz y Sanz;
Directeur des Laboratoires, Palacio del Mar, Acuario,
San Sebastian.
M. le Dr. Francisco Navarro;
Sous-Directeur de l'Institut Espagnol d'Océanographie et Chef du Département de Biologie;
Alcalá 27, Madrid.

Finlande:

M. le Dr. G. Granqvist;
Institut pour l'Exploration de la Mer;
Helsingfors.
*M. le Professeur, Dr. T. H. Järvi;
Calonius 9 C, Helsingfors.

France:

M. Jean le Gall;
Agrégé de l'Université, Directeur de l'Office Scientifique et Technique des Pêches Maritimes;
59, Avenue Raymond-Poincaré, Paris.
M. Marius Terrin;
Directeur des Pêches au Ministère de la Marine Marchande;
3, Place de Fontenoy, Paris.

Grande Bretagne:

M. A. T. A. Dobson, C.B., C.V.O., C.B.E.;
Fisheries Adviser, Ministry of Agriculture and Fisheries;
The Elms, Walsham-le-Willows,
Bury St. Edmunds, Suffolk.
M. J. E. de Watteville, C.B.E.;
Deputy Secretary;
Scottish Home Department, Edinburgh, Scotland.

---

* Empêché d'assister à la réunion.
[1] Décédé le 20. XII. 1951

Irlande:

M. A. E. J. WENT, D. Sc., Ph. D., A.R.C.S.;
Chief Inspector of Fisheries and Scientific Adviser;
3, Kildare Place, Dublin.

Islande:

M. DAVIÐ ÓLAFSSON;
Directeur des Pêches; Fiskefélag Islands, *Reykjavik.*
M. ÁRNI FRIÐRIKSSON;
The University, Research Institute, Fisheries Department;
Borgartún 7, Reykjavik.

Norvège:

M. le Professeur H. U. SVERDRUP; Ph. D., Ll. D.;
Norsk Polarinstitutt, *Oslo.*
M. JOHS. SELLÆG; Département des Pêches, *Oslo.*

Pays-Bas:

M. G. J. LIENESCH;
Directeur des Pêches;
Wassenaarseweg 18, 's-Gravenhage.

M. le Dr. B. HAVINGA;
Directeur de l'Institut Royal pour l'Exploration de la Mer, Oost Indisch Huis;
Amsterdam.

Portugal:

*M. le Contre-Amiral MANUEL C. Q. MEIRELES;
Président de la Commission Centrale des Pêcheries, Ministério da Marinha;
Lisboa.
M. le Dr. ALFREDO S. M. DE M. RAMALHO;
Directeur de la "Instituto de Biologia Marítima",
Cais do Sodré, Lisboa.

Suède:

M. le Dr. K. A. ANDERSSON;
Bragevägen 4, Djursholm 2.
M. le Dr. B. KULLENBERG;
Institut d'Océanographie;
Stigbergstorget 8, Göteborg.

EXPERTS:

Belgique:

GILIS, M. le Professeur CH.; Ministère des Transports, Administration de la Marine, *Ostende.*

Danemark:

*DINESEN, M. B.; Chef de Département, Ministère des Pêches, *Borgergade 16, Copenhague.*
*DJURHUUS, M. KRISTIAN; Président, Gouvernement locale, *les îles Féroé.*
JENSEN, M. le Dr. AAGE J. C.; Commission Danoise pour l'Exploration de la Mer, *Charlottenlund Slot.*
POULSEN, M. le Dr. ERIK M.; Station Biologique Danoise, *Charlottenlund Slot.*
THOMSEN, M. HELGE, Cand. mag.; Conseiller Hydrographique de la Commission Danoise pour l'Exploration de la Mer, *Charlottenlund Slot.*

Finlande:

SEGERSTRÅLE, M. le Dr. S.; Directeur, Laboratorium Hydrobiologicum Soc. Sci. Fennicae, Aman. Zool. Mus. of the University, *Norra Järnvägsgatan 13, Helsingfors.*

France:

ANCELLIN, M. J.; Chef du Laboratoire à l'Office Scientifique et Technique des Pêches Maritimes à *Boulogne s/Mer.*
CADENAT, M. J., Dr. ès-Sc.; Institut Français d'Afrique Noir, *Dakar (Sénégal).*
DESBROSSES, M. P.; Inspecteur Général, Chef du Service de Biologie marine à l'Office Scientifique et Technique des Pêches Maritimes, *59, Avenue Raymond-Poincaré, Paris.*
DIEUZEIDE, M. le Dr.; Directeur de la Station d'Aquiculture et de Pêche de *Castiglione, Algérie.*
FAURE, M. LOUIS; Chef de Laboratoire à l'Office des Pêches Maritimes, *Paris.*
FONTAINE, M. MAURICE, Dr. ès-Sc.; Professeur de Physiologie au Museum d'Histoire Naturelle, *Paris.*
FURNESTIN, M. JEAN, Dr. ès-Sc.; Directeur du Service Scientifique des Pêches Maritimes à *Casablanca (Maroc).*
HELDT, M. HENRI; Directeur de la Station Océanographique de *Salammbô (Tunisie).*
LETACONNOUX, M. R.; Chef du Laboratoire à l'Office Scientifique et Technique des Pêches Maritimes à *la Rochelle.*
TEISSIER, M. G.; Professeur de Zoologie à la Sorbonne, *Paris.*
VIBERT, M. R.; Inspecteur des Eaux et Forêts, Chef du Service des Pêches au Ministère de l'Agriculture, *Paris.*

Grande Bretagne:

England.

BURD, Mr. D.; Fisheries Laboratory, *Lowestoft.*
CARRUTHERS, Dr. J. N., F. Inst. P.; Hydrographic Department (Oceanogr. Branch), Admiralty, *Oxgate Lane, Cricklewood, London, N.W. 2.*
COOPER, Dr. L. H. N.; Marine Biological Association, *Citadel Hill, Plymouth.*
CUSHING, Dr. D. H., M.A.; Fisheries Laboratory, *Lowestoft.*
GRAHAM, Mr. MICHAEL, O.B.E., M.A., F.L.S.; Fisheries Laboratory, *Lowestoft.*

* Empêché d'assister à la réunion.

HICKLING, Dr. C. F., Fisheries Adviser; Colonial Office, Sanctuary Buildings, *Great Smith Street, London, S. W. 1.*
HODGSON, Dr. W. C.; Fisheries Laboratory, *Lowestoft.*
LEE, Mr. A. J., B. A.; Fisheries Laboratory, *Lowestoft.*
MARGETTS, Mr. A. R., B. A.; Fisheries Laboratory, *Lowestoft.*
PENTELOW, Mr. F. T. K., M. A.; Ministry of Agriculture and Fisheries, St. Stephen's House, Victoria Embankment, *London, S.W. 1.*
SIMPSON, Mr. A. C., B. Sc.; Fisheries Laboratory, *Lowestoft.*
VAUX, Mr. D.; Fisheries Laboratory, *Lowestoft.*
WAUGH, Mr. G. D.; Oyster Research Station, *Burnham-on-Crouch.*
WIMPENNY, Mr. R. S., M. Sc.; Fisheries Laboratory, *Lowestoft.*

Scotland.

LUCAS, Dr. C. E.; F.R.S.E.; Director, Marine Laboratory, *Aberdeen.*
MILLAR, Dr. R. H.; Marine Station, *Millport, Isle of Cumbrae.*
PARRISH, Mr. B. B., B. Sc.; Marine Laboratory, *Aberdeen.*
TAIT, Dr. JOHN B., Ph. D., F.R.S.E.; Marine Laboratory, *Aberdeen.*

Islande:

*EINARSSON, M. le Dr. HERMANN; The University, Research Institute, Fisheries Department, *Reykjavik.*
STEFÁNSSON, M. UNNSTEINN, Mag. Scient.; The University, Research Institute, Fisheries Department, *Reykjavik.*

Norvège:

AASEN, M. OLAV; Institut pour l'Exploration de la Mer, *Bergen.*
*BERGERSEN, M. l'Ambassadeur BIRGER; *Stockholm.*
BRAARUD, M. le Professeur T.; l'Université, *Blindern, Oslo.*
DEVOLD, M. FINN; Institut pour l'Exploration de la Mer, *Bergen.*
EGGVIN, M. le Dr. JENS; Institut pour l'Exploration de la Mer, *Bergen.*
FØYN, M. le Dr. ERNST; Laboratoire Biologique, *Frederiksgate 3, Oslo.*
HENLY, Mlle EVA, mag. scient.; Statens Utkleknings-anstalt, *Flødevigen.*
LEA, M. E.; *Frederiksgate 3, Oslo.*
ROLLEFSEN, M. GUNNAR; Directeur de l'Institut pour l'Exploration de la Mer, *Bergen.*
SØMME, M. SVEN; Département d'Agriculture, *Oslo.*
WIBORG, M. KR. FR.; Institut pour l'Exploration de la Mer, *Bergen.*

Pays-Bas:

BAERENDS, M. le Professeur; *Reitemakersreijge 14, Groningen.*
BOER, M. P. A. de; *Wassenaarseweg 18, the Hague.*
BOEREMA, M. le Dr. L. K.; *Wassenaarseweg 20, the Hague.*
CREUTZBERG, M. P. H.; *Wassenaarseweg 20, the Hague.*
DROST, M. H. S.; *Wassenaarseweg 18, the Hague.*
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KORRINGA, M. le Dr. P.; *Halsterseweg E 176, Bergen op Zoom.*
TERMIJTELEN, M. l'Amiral J. W.; Kon. Ned. Met. Instituut, *de Bilt.*
THURMER, M. A.; *Wassenaarseweg 18, the Hague.*
VERWEY, M. le Dr. J.; Zoölogisch Station, *den Helder.*

Suède:

HESSLE, M. le Dr. CHR.; Département des Pêches, *Göteborg.*
HULT, M. le Dr. JÖRAN; Chef du Département des Pêches, *Göteborg.*
HÖGLUND, M. le Dr. HANS; *Lysekil.*
KOCZY, M. le Dr. F. F.; Institut d'Océanographie, *Stigbergstorget 8, Göteborg.*
MOLANDER, M. le Dr. A. R.; *Lysekil.*
ROSÉN, M. le Dr. NILS; *Aschebergsgatan 34, Göteborg.*
SAHLIN, M. le Fil. lic. S.; Département des Pêches, *Göteborg.*

OBSERVATEURS:

M. MOHAMED EL BORAI; Consul Général d'Egypte, *3 Herman Heijermansweg, Amsterdam.*
M. le Dr. G. BÖHNECKE; Deutsches Hydrographisches Institut, *Seewartenstrasse 9, Hamburg 11.*
*M. le Dr. H. J. DEASON; Chairman of the International Commission for the Northwest Atlantic Fisheries, Fish and Wildlife Service, *Washington 25, D.C., U.S.A.*
M. G. M. GERHARDSEN; F.A.O., *Viale delle Terme di Caracalla, Rome.*
M. le Dr. W. R. MARTIN; Executive Secretary to the International Commission for the Northwest Atlantic Fisheries, Atlantic Biological Station, *St. Andrews, N.B., Canada.*
M. D. J. ROCHFORD; Indo-Pacific Fisheries Council, Division of Fisheries, Marine Biological Laboratory, C.S.I.R.O., *Cronulla, N. S. W., Australia.*
M. W. H. SCHUSTER; F.A.O., *Viale delle Terme di Caracalla, Rome.*
M. RAOUL SERENE; Indo-Pacific Fisheries Council, Oceanographic Institute, *Nha Trang, Annam.*
M. le Professeur FRANCESCO VERCELLI; Istituto Talassografico, *Viale R. Gessi 2, Trieste, Italy.*
M. le Dr. LIONEL A. WALFORD; Fish and Wild Life Service, Department of the Interior, *Washington, D.C., U.S.A.*

* Empêché d'assister à la reunion.

HÔTES:

M. le Dr. H. O. BULL, Ph. D., F.C.S.; Dove Marine Laboratory, *Cullercoats, Northumberland.*

M. le Dr. W. F. THOMPSON; Fisheries Research Institute, University of Washington, *Fisheries Hall No. 4, Seattle 5, Washington, U.S.A.*

PERSONNEL DU SECRÉTARIAT:

Charlottenlund Slot, Charlottenlund, Danemark.

M. le Dr. P. JESPERSEN, Secrétaire Général.
M. JENS SMED, mag. scient. et cand. mag., Hydrographe.
Mlle E. BRØNNICHE, Secrétaire (Administration).
Mlle le Dr. M. REHDER, Secrétaire (Information).
Mlle E. CHRISTIANSEN, Secrétaire (Statistiques).
Mlle E. HEDEGAARD, Secrétaire.

AGENDA

for the thirty-ninth Meeting of the International Council for the Exploration of the Sea
Amsterdam, 1st—9th October, 1951.

A. Opening Meeting of Delegates and Experts.

1. Welcome and opening address by the President.
2. Report as to present Participation.
3. Reorganization of Committees and Meetings.
4. Reports by Mr. Dobson on:
   a) Overfishing Problem.
   b) Meeting of Northwest Atlantic Fisheries Commission.
5. Report by the Chairman of the Herring Committee on Echo Sounders etc.
6. Presentation of the Administrative Report.
7. Presentation of estimated Statement of Accounts for 1950—1951.

B. Meeting of Delegates.

8. Opening of the Proceedings by the President.
9. Election of President and Vice-Presidents for 1951—1952.

C. Final Council Meeting of Delegates and Experts.

10. Opening of the Proceedings by the President.
11. Final Approval of the Accounts for 1949—1950.
12. Adoption of the Administrative Report.
13. Consideration of Reports of Committees submitted by the Consultative Committee.
14. Estimates for the Financial Year 1951—1952.
15. Nomination of Finance Committee, Editors, etc.
16. Time and place for next Council Meeting.
17. Other business.
18. Conclusion of the Meeting.

1ÈRE PARTIE

PROCÈS-VERBAUX

REPORT

of

THE THIRTY-NINTH MEETING OF THE COUNCIL

First Sitting: Monday, 1st October 1951, at 10 a.m.

The President, Dr. K. A. ANDERSSON, in the Chair.
Present: General Secretary of the Ministry of Agriculture, Fisheries and Food, Mr. BONNERMANN, Members and Experts, Observers and Guests (*vide* list pp. 4—7).

Agenda, Point 1. The President opened the meeting and expressed the Council's thanks to Mr. BONNERMANN for the Dutch Government's kind invitation to hold the Council Meeting in Amsterdam.

Mr. BONNERMANN, representing the Minister of Agriculture, Fisheries and Food, who was prevented from attending, welcomed the assembly and wished them progress in their work.

The President remembered the grievous loss which the Council had sustained in the deaths of Dr. HARALD BLEGVAD, late General Secretary, and Professor KNUT DAHL, late Chairman of the Salmon and Trout Committee. The audience stood for a moment in silence.

The President then welcomed new attendants, especially Observers and Guests.

A telegram was sent to Her Majesty the Queen of Holland and His Majesty the King of Denmark, and further to the widow of Dr. BLEGVAD.

The President informed the members of the appointment as General Secretary of Dr. POUL JESPERSEN, who had accepted the office on the same terms as Dr. BLEGVAD and was resigning as Chairman of the Plankton Committee.

Agenda, Point 2. The President reported that Poland had now definitely withdrawn from the Council and that Western Germany had applied for re-admission. According to Statutes the German request would have to be sent, through the Danish Foreign Office, to all participating Governments, for their concurrence.

Agenda, Point 3. The Chairman of the Consultative Committee, referring to the plan of reorganization submitted and discussed last year, stated that one proposal only had been received after which all northern areas would be included in one Committee for the Northern Seas.

Agenda, Point 4. Mr. DOBSON reported briefly on the present situation with regard to the Overfishing Problem and on the first Meeting of the International Commission for the Northwest Atlantic Fisheries, held in Washington in April 1951.

Mr. LIENESCH gave a summary of the 3rd meeting of the International Whaling Commission held in Cape Town in July 1951.

Agenda, Point 5. The Chairman of the Herring Sub-Committee, referring to the Council's recommendation last year on Echo-Sounders and ASDIC (R.P.-V. 129, I, p. 27, No. 5b) gave a brief account of the progress of work, consisting chiefly in collecting information on the use of these instruments and for a future co-operation between research workers and manufacturers.

Agenda, Point 6. The General Secretary drew attention to the Administrative Report, just distributed, and asked for comments at the final sitting.

Agenda, Point 7. Mr. DOBSON referred to the estimated Statement of Accounts. (The final Statement of Accounts appears on page 2 in part II of this report.)

The meeting adjourned at 11.10 a.m.

Second Sitting, attended by Delegates only, followed immediately.

Agenda, Points 8 and 9. The President declared the meeting opened and asked for proposals for the election of a President and Vice-Presidents. At the proposal of Mr. DOBSON, Dr. K. A. ANDERSSON was re-elected.

The President thanked the members for their renewed confidence in him and proposed Mr. DOBSON re-elected first Vice-President. Carried.

At the motion of Mr. FRIÐRIKSSON, Mr. LIENESCH and Professor LE GALL were re-elected.

Dr. RAMALHO did not want to stand for re-election; Mr. DOBSON testified to his able service and Dr. RAMALHO moved the election of Professor SVERDRUP in his place. Carried.

The meeting adjourned at 11.25 a.m.

Third Sitting: Tuesday, 9th October 1951, at 11.00 a.m.

The President, Dr. K. A. ANDERSSON, in the Chair.
Present: Members, Experts, Observers, and Guests.

Agenda, Point 10. The President opened the proceedings and read the telegrams sent to and received from Her Majesty, the Queen of Holland, and His Majesty, the King of Denmark, as well as the telegram sent to Mrs. BLEGVAD and her reply.

Agenda, Point 11. The Accounts for 1949/50 were finally approved.

Agenda, Point 12. The Administrative Report of 1950/51 was adopted.

Agenda, Point 13. The President referred to the Reports and Recommendations of Committees which were placed round the table; they had all been considered by the Consultative Committee and endorsed by the Bureau. He called special attention to Recommendations 4a and bi, ii; they were supported by the assembly.

The Chairman of the Consultative Committee added that the Committee had supported the proposal of a special sub-committee of the Bureau that a Jubilee Report should be published. It had been decided to leave the proposed report to be dealt with by the Editorial Committee. This was agreed.

The President mentioned the following changes in Chairmanship:— Dr. LUCAS takes over the whole of the North Sea Sub-Committee; Prof. BRAARUD succeeds Dr. JESPERSEN in the Plankton Committee, and Dr. RAMALHO succeeds Dr. NAVARRO in the European Atlantic Slope Sub-Committee. The members were further informed that the Western Mediterranean Sub-Committee had been dissolved.

The President proposed a vote of thanks to the retiring Chairmen, and to Dr. LUCAS and Dr. POULSEN as convener and reporter to the Special Scientific Meeting.

The reports and recommendations of committees and all recommendations from the Special Scientific Meeting were adopted en bloc.

Agenda, Point 14. Mr. DOBSON presented the revised Estimates for 1951/52 and referred specially to the following items:— A, savings and reductions:— I, 7000 Kr. and V, 7000 Kr. B, increases: — IV, 2000 Kr. (extra expenses at anniversary meeting); VI, 13,000 Kr. (Plankton and Jubilee Reports); IX, 3000 Kr. (gratuity to Mrs. BLEGVAD who would in total receive 5000 Kr., 2000 Kr. of which to be paid in 1950/51). The total expenditures were thus estimated to exceed receipts by 10,000 Kr. On Mr. DOBSON's recommendation the Estimates were accepted.

Agenda, Point 15. The necessary nominations took place. Dr. ROSÉN and Mr. LUMBY were re-elected Editors for Statistics and the *Journal du Conseil* respectively; Dr. JESPERSEN would continue as Editor of the Plankton Sheets. For members of the Finance Committee see page 14.

Agenda, Point 16. The next meeting of the Council —the 50th anniversary—was fixed for Copenhagen from September 29th, 1952.

Agenda, Point 17. Mr. SCHUSTER from FAO presented to the assembly the sincerest greetings of its Director-General and the Director of the Fisheries Division, and told them about FAO's work, problems and results achieved in tropical countries, and emphasized the importance of co-operation.

Dr. WALFORD expressed his gratitude to the Council for having invited the U.S.A. to attend the Council Meeting.

Agenda, Point 18. The Meeting concluded with vote of thanks to the Dutch Government and the various official quarters at Amsterdam for their kind hospitality and valuable help, and further to the President, the First Vice-President, the General Secretary, and the Staff.

The meeting terminated at 12.15 p.m.

Estimates for the Financial Year $^{1}/_{11}$ 1951—$^{31}/_{10}$ 1952.

EXPENDITURE

	D. kr.	D. kr.
I. Incidentals		
1. President	5,000.00	
2. Editor of the Journal	3,000.00	
3. Assistance to Editor of the Journal	1,500.00	
4. Chairman of Consultative Committee	1,000.00	
5. Chairmen of Sub-Committees and Committees	27,000.00	
6. Editor of Statistics	2,000.00	
		39,500.00
II. Headquarter Staff		
1. General Secretary	10,384.00	
2. Editorial Assistance	1,500.00	
3. Assistant Secretary (General)	11,364.00	
4. Assistant Secretary (Information)	10,463.00	
5. Statistical Secretary	8,592.00	
6. Secretarial Assistant	7,653.00	
7. Clerical Assistant	6,558.00	
		56,514.00
III. Hydrographical Staff		
1. Hydrographer	13,604.00	
2. Clerical Assistant	6,558.00	
3. Assistance	338.00	
4. Card Index work	1,500.00	
		22,000.00
IV. Office Expenses		21,000.00
V. Travelling Expenses		8,000.00
VI. Printing and Distribution		70,000.00
VII. Pensions		4,500.00
VIII. Extraordinary Cost-of-living Bonus		7,978.00
IX. Mrs. Blegvad		3,000.00
		232,492.00

RECEIPTS

		D. kr.	D. kr.
I. Contributions			
France		30,000.00	
Great Britain		30,000.00	
Belgium		15,000.00	
Denmark		15,000.00	
Holland		15,000.00	
Iceland		15,000.00	
Ireland		15,000.00	
Norway		15,000.00	
Portugal		15,000.00	
Spain		15,000.00	
Sweden		15,000.00	
Finland		7,500.00	
			202,500.00
II. Interests			
On Bank Deposits	ca.	267.00	
On Investments		4,133.00	
			4,400.00
III. Sale of Publications	ca.		15,600.00
Estimated Excess of Expenditure over Income			9,992.00
			232,492.00

Estimate of Pension Fund Account for 1951—52.

EXPENDITURE

	D. kr.
Miss Hansted's pension	5,824.00
Extraordinary cost-of-living bonus	504.00
Estimated balance as per Oct. 31, 1952	105,661.04
	111,989.04

RECEIPTS

		D. kr.
Balance on November 1st 1951		107,440.04
Estimated interests in bank	ca.	75.00
„ „ on investments		4,474.00
		111,989.04

List of Members of Committees.

(One member, only, from each country is entitled to vote.)

Consultative Committee.

Mr. MICHAEL GRAHAM, Chairman,
Mr. G. ROLLEFSEN,
Dr. Å. V. TÅNING,
Dr. C. E. LUCAS,
Dr. E. M. POULSEN,
Dr. CHR. HESSLE,
Prof. JEAN LE GALL,
Dr. A. DE M. RAMALHO,
Dr. J. FURNESTIN.
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Plankton Consultant: Dr. C. E. Lucas.

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Sub-Committee on the Faroe Question.

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Prof. J. LE GALL,
Dr. B. HAVINGA,
Mr. BIRGER RASMUSSEN,
Dr. C. E. LUCAS,
Mr. Á. FRIÐRIKSSON.

Sub-Committee for the Standardization of Zooplankton Methods.

Mr. F. S. RUSSELL, Chairman,
Mr. R. S. WIMPENNY,
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Dr. H. HÖGLUND,
Mr. K. F. WIBORG.

Sub-Committee for Organization of Combined Hydrographical-Biological Investigations.

***Dr. JOHN B. TAIT, Chairman,**

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*Mr. J. SMED, Secretary.

* Members of the Executive Committee.

Sub-Committee for Promoting Measurements of Currents in all their Aspects.

Dr. J. N. CARRUTHERS, Chairman,
Mr. L. FAURE, Dr. P. GROEN, Lft.-Cdr. J. R. LUMBY.

ENGLISH VERSION

SPECIAL SCIENTIFIC MEETINGS

A. General Meeting.

Chairman: MICHAEL GRAHAM.

The Chairman opened the meeting and called for résumés of the following contributions.

A. R. MOLANDER: "Remarks on Overfishing". The President, in the absence of the author, exhibited diagrams showing decline of the weight-density of haddock in the area of the Swedish fishery, which decline he ascribed to fishing, accompanied as it was by changes in the proportion of "large" and "medium" compared with "small" fish. The Danish seine in recent years has played a dominant part.

A. J. C. JENSEN in a verbal communication reported his calculation of the proportionate increase in steady yield from an increase of mesh compared with that from a decrease of fishing effort, giving results in favour of proceeding by mesh increase.

L. K. BOEREMA: "On the Stocks of Demersal Fish on the Fishing Grounds worked by Dutch Vessels in the North Sea", submitted figures suggesting that the North Sea is being overfished at least as much as before the war. The difference in the series for steam trawlers and cutters was explained as due to the different populations fished, younger or older.

CH. GILIS: "Position de la Belgique vis-à-vis de l''Overfishing Conference', Londres 1946", showed how the stocks fished by Belgian trawlers in the North Sea had diminished by 44.2 % since 1946, reaching a level scarcely above that of pre-war years. He emphasized the importance of remedial measures.

R. LETACONNOUX: "Considérations Statistiques sur le Rendement de la Pêche après Guerre", dealing with the stocks of various fish on the continental plateau between the Gulf of Gascony and Ireland showed a level in 1940 approximating to that of 1937—39 for mixed species, but distinctly lower than 1937—39 for the hake. For several species however (*P. centrodentus*, *L. megastoma*, *Mullus*, etc.) the level was still above pre-war, and the total diminution was due mainly to that of the hake—both large and small.

A note tabled from Lowestoft, "Hake on the West Coast", concluded that, particularly in the areas near Ireland, the stocks of hake will probably soon have fallen below pre-war level, demonstrable in the numbers of the various sizes caught.

Returning to the North Sea, another note from Lowestoft showed rapid diminution of stocks, with those of haddock (in the English fishery) and plaice in a critical condition, the survival-rates of plaice being comparable with those of pre-war years.

B. B. PARRISH reported on: "The Post-War Haddock Stocks of the North Sea", and showed a total mortality rate of about 64 %, equal to the pre-war value. A graph of yield against fishing mortality demonstrates overfishing.

"The State of the Haddock Stocks at Faroe 1914—1950" was the subject of a rather full paper by R. JONES, to be published, it is hoped, elsewhere. This gave a reasoned review leading to the conclusion that the stock is overfished, on the basis of existing estimates of parameters.

The Chairman regretted that, owing to the late start, it would not be possible to discuss these contributions, but reminded the meeting that their subject was familiar, and that critical study of these questions was continuous in all the member countries. He therefore called on Professor W. F. THOMPSON of the University of Washington, Seattle, U.S.A., to deliver his address on "Condition of Stocks of Halibut in the Pacific".

For the Pacific Halibut Fishery, the question is still debated, in some quarters in the U.S.A., whether the changes before and during regulation could be ascribable mainly to natural causes. Dr. THOMPSON showed features of the statistics that seemed critical on this question. For example he called attention to a feature that had been repeated three times: this was an increased fishing effort accompanied by a temporary increase in catch, and a decrease in the abundance on the ground, whereas if due to natural causes the catch and abundance should have increased together. Other points included: the timing of changes of stock with the introduction of regulation; the regular sequence of changes in the yield year by year since regulation; the gradation of stock levels with distance from the market. The combination of these tests presents extreme difficulty to those who would ascribe the changes to natural causes.

Dr. THOMPSON also presented a statement by H. A. DUNLOP and F. H. BELL on the present condition of stocks. Some grounds within the general area show accumulation of stock and some depletion, which are considered to be detailed effects of the control of the fleet.

B. Fisheries Hydrography Meeting.

Convener and Chairman: Dr. C. E. Lucas. — Reporter: Dr. E. M. Poulsen.

I. Proceedings.

1. Introduction by the Chairman.
The following papers were read:
2. Prof. H. U. Sverdrup: "On the Place of Hydrography in Fisheries Research."
3. Dr. H. O. Bull: "An Evaluation of our Knowledge of Fish Behaviour in Relation to Hydrography."
4. Miss Eva Henly: "The Influence of the Gas-Content of Sea Water on Fish and Fish Larvae."
5. Mr. F. S. Russell: "The Relation of Plankton Research to Fisheries Hydrography."
6. Dr. J. H. Fraser: "Hydro-Biological Correlations at the Entrances to the Northern North Sea in 1947."
7. Dr. L. H. N. Cooper: "Water Movements over the Continental Slope in Relation to Fisheries Hydrography."
8. Dr. A. J. C. Jensen: "The Influence of Hydrographical Factors on Fish Stocks and Fisheries in the Transition Area."
9. Dr. H. Alander: "Fisheries Hydrography in the Baltic."
10. Dr. H. Einarsson: "Parallelism in the Year-Class Strength of Seasonal Races of Icelandic Herring and its Significance."
11. Lt. V. F. C. Veley: "Year-Class Fluctuations in the Sprat."
12. Mr. A. J. Lee: "The Influence of Hydrography on the Bear Island Cod Fishery."
13. Mr. F. Devold: "On the Search for the Large Herring in the Norwegian Sea" (and verbal communication).
14. Mr. R. E. Craig: "The Scottish Programme of Herring Hydrography, 1951."
15. Dr. L. A. Walford: "Synopsis of Fishery-Hydrographical Results in U.S.A."
16. Dr. D. Rochford: "The problems of Australian Oyster Biology."
17. Dr. G. Böhnecke: "Some remarks on the German Position in Fishery-Hydrography."

After some discussion the following recommendations were adopted.

II. Recommendations as amended by the Consultative Committee.

1) As the proceedings of this meeting have shown that a combination of biological, hydrographical, meteorological, physiological or statistical researches has furthered our knowledge of biological productivity, of the habits of the fish stocks, and also the fisheries themselves, it is recommended that researches along these lines should be continued.

2) It is recommended that committees should state as definitely as possible what problems they wish the hydrographers to attack and solve.

3) It is recommended that compendious studies of the normal behaviour of our major food fishes should be carried out either by direct observations or by laboratory experiments.

4) It is recommended that efforts should be made to encourage the writing of monographs describing the hydrographic conditions in the seas in which fishery research workers are interested.

5) It is recommended that as a direct means of showing the dependence of the fish stocks on hydrographic conditions, and as a direct help to the fisheries, experimental fishing on a commercial scale and other forms of assessment should be carried out simultaneously with hydrographic observations.

6) It is recommended that the immediate aims of the Plankton Committee should include (i) studies of the basic conditions of productivity in the sea, and (ii) an attempt, by observations over a series of years, to correlate the number of survivors of a year-class of fish with the presence or absence of any one or more types of plankton organisms, both predatory and food-producing, during the early planktonic life of the fish.

7) It is recommended that the contributions to this meeting be published by the Council as a special report. Contributions that are or will be published elsewhere should only be abstracted in the report.

8) It is recommended that the results for cod near Bear Island and for herring in the open Norwegian Sea be brought to the attention of the fishermen of all countries.

A. For cod fishing near Bear Island.

(i) That on grounds west of Bear Island, in early summer and again in autumn, atlantic type water touching the bank can give good trawl catches, with bottom temperature near $3^3/_4$° C.

(ii) That west of Longitude 20° E. a bottom temperature of less than $1^3/_4$° C. is generally unfavourable, and so may cause concentrations of cod near its boundary.

B. For herring in the Norwegian Sea.

During the last 4 years (1948—1951) herring shoals have been observed in extensive areas over the deep water north and north-east of the Faroe Isles in May-June.

Later in the summer the shoals seem to concentrate in the border region of the East Icelandic Arctic current between 66° N. Lat. and Jan Mayen. In the two recent summers the Norwegian investigations have shown that the herring shoals are also numerous from Jan Mayen north-eastwards along the border between the atlantic and the arctic water, temperature approximately 6—8° C. in the open sea.

Last summer (1951) herring drifters made good catches 80—100 n.m. east of Langanes, Iceland, and also in the Jan Mayen area.

Report and Recommendations of the Consultative Committee.

Chairman: Mr. Michael Graham.

I. Proceedings.

1) The Chairman referred to the loss sustained in the deaths of Dr. H. Blegvad and Professor Knut Dahl. The members stood in silence for a minute.

2) Organization of Committee Work.

The requirements of the new scheme were discussed in the first sitting. Problems of wider interest should be discussed at the new larger committees, and the members were asked to choose such items from the contributions to their committees. The items for the Northern Seas Meeting were discussed and agreed. The members were advised to announce their programmes on the black board.

Mr. Graham was asked to act as Chairman at the General Meeting, Dr. Lucas at the Special Scientific Meeting and Dr. Tåning and Mr. Friðriksson respectively were appointed Chairmen of the Northern Seas and the Pelagic Committees.

Dr. Poulsen, as the reporter to the Special Scientific Meeting, proposed to see if the meeting provided material for recommendations, and, if so, to formulate them, and it was left to his discretion whether also to prepare a résumé.

In the second sitting, at the suggestion of the President, the lessons from the session were discussed, and Recommendations II, 2 a-c were passed. The following Conveners and Chairmen of larger committees for the 1952 session were appointed: Mr. Rollefsen for the Northern Seas, Mr. Friðriksson for the Pelagic Committee, and Prof. le Gall for the Atlantic Committee. No Special Scientific Meeting will take place in 1952.

3) Progress Report.

The report, distributed in advance, was passed and two sub-reports, one worked out by Dr. Poulsen on the protection of *Pandalus borealis*, and the other by the Sub-Committee on the Salmon Fishery in International Waters, were distributed during the meeting and gratefully accepted. These reports are given in Appendices A and B. Mr. Wimpenny called attention to his point 5 (App. B) requiring the attention of the Salmon and Trout and the Statistical Committees.

4) Annales Biologiques.

The issue for 1950 was laid on the table in proof-print. The possibility of some economy was discussed in the first sitting, and a small Sub-Committee, consisting of Dr. Tåning, Mr. Wimpenny, Dr. Jensen and the Secretary for Information, was appointed. In the second sitting, Mr. Wimpenny reported shortly on their findings. He stressed the importance of dealing with the natural brood year of special species, as for instance that of plaice ending on 31. March. The herring, the President added, might require special consideration in this respect.

It was agreed that (a) at the annual meeting only separate proofs should be available, for use of the Chairmen concerned; (b) papers should reach the General Secretary as soon as possible after December, but normally not later than 1. June; (c) material should be worked up by calendar years, unless otherwise stated.

5) General Reports of Committees.

The reports of all Committees, which had been distributed, were discussed and passed at the second sitting. See Recommendation 1.

In considering the report of the Sub-Committee on the Western Mediterranean, the last two paragraphs were endorsed thanking M. Henri Heldt. Referring to the Statistical Committee's report and to its suggested co-operation with FAO, it was recommended that the Council offer facilities for a meeting of European experts at Charlottenlund Slot, if FAO decides to call such a meeting.

Concerning the demands for publication made by various Committees, Recommendations II, 3 a-c were passed.

The recommendations of the Shellfish Committee and the Hydrographical Committee (1 and 4) were strongly supported by the Committee (see Rec. 3).

The Chairman reported further that, acting for the Editor of the Journal in his absence, he had agreed to accept a somewhat reduced version of Dr. Thompson's paper on halibut, and the short statement by Dunlop and Bell of the Pacific Halibut Commission.

The recommendations of the Special Scientific Meeting were discussed at some length and, after some uncontentious amendments, they were accepted. The amended form is given in the meeting's report.

6) Other Work.

(a) Jubilee Report. The President presented to the Committee two suggestions on the form of a Jubilee Volume: one made by himself, and the other by an *ad hoc* Sub-Committee appointed by the Bureau in May. After considerable discussion, it became clear that the Committee favoured the form proposed by

the Sub-Committee of the Bureau, and printed as Appendix C.

(b) Guide to Fish Marks. At the suggestion of Dr. HAVINGA, the Committee agreed to ask the Bureau to consider the best means of bringing this up to date and republishing it in the Journal.

7) Election of Chairman.

At the proposal of Prof. LE GALL, Mr. MICHAEL GRAHAM was unanimously re-elected.

II. Recommendations.

1. General Reports of Committees.

The reports and recommendations of Committees were accepted with the exceptions noted below.

2. Organization of Committee Work.

(a) The new organization was recognized as satisfactory on the whole, but it was agreed that:
  (i) Conveners and Chairmen of larger Committees should be appointed well in advance.
  (ii) Sub-Committees should where possible be held in advance of their parent committees, without prejudice to the channel for sub-committee recommendations.

(b) Note was also taken of suggestions that
  (i) Special Meetings should sometimes be earlier in the programme,
  (ii) detailed programmes of contributions should be available to each member on arrival,
  (iii) the General Meeting and Committee Meetings should be as carefully as possible prepared in advance, with no obligation to hold a General Meeting unless by May good material has reached the Chairman of the Consultative Committee.

(c) It was recognized that while only one representative of a country had the right to vote and the responsibility (Statutes, Rule 14), the accepting of more than one member was left to the discretion of the Chairmen, bearing in mind that committees should not be too large.

3. Publications.

(a) That Prof. BRAARUD's Report be published in the series *Rapports et Procès-Verbaux*.

(b) That the contributions to the Special Scientific Meeting on Fisheries Hydrography be published as a special report, except for those published elsewhere, which should only be abstracted.

(c) That publication of the following be approved in principle, manuscripts to be considered by the Editorial Committee when they become available.
  (i) The hydrographical report on the combined work in the North Sea.
  (ii) The symposium on hake and new observations on tunny recommended by the Atlantic Committee.
  (iii) It is recommended that a summary of the papers on herring tagging, presented in the Pelagic Meeting, should be prepared and published before the next annual meeting of the Council.

4. Co-operative Work.

The Consultative Committee strongly supports the following Committee recommendations:—

(a) Shellfish Committee. That the Council write to FAO asking for assistance in preparing annually a list of names and addresses of the various institutes engaged on work on marine cultures, together with results and programmes.

(b) Hydrographical Committee.
  (i) That the Sub-Committee for Hydrographical-Biological Investigations be continued for one year.
  (ii) It is hoped that the charts of sea surface conditions may be continued for the time being.

APPENDIX A

The Question of Protection of Marketable Crustaceans in the Transition Area.

By

ERIK M. POULSEN

AT the session of the Council in October 1945 the Transition Area Committee and the Consultative Committee passed a recommendation saying, that the question concerning the protection of *Pandalus borealis*, *Nephrops norvegicus* and *Homarus vulgaris* ought to be discussed as soon as possible with representations of the government. Through the following years the Transition Area Committee has in recommendations and otherwise stressed this question.

The reason for the recommendation—still in force—is that the stocks of these marketable crustaceans are more or less overfished in the Transition Area.

I. The fishery for lobster (*Homarus*) is an old one, and through many years a considerable decrease in the catch per fishing unit has been observed and in some places too a considerable decline in the yearly catches. As also in some places a diminishing of the average size of the lobsters caught is observed, there

is no doubt that overfishing takes place and that, therefore, an increased protection is necessary.

II. The fishery for Norway lobster (*Nephrops*) is a rather new one as far as it has only been of importance since about 1930. A certain decrease in the total yield of the fishery has been observed through later years. Thus the Danish catch was in 1946 and 1947 1113 and 1041 tons against in 1948 and 1949 618 and 640 tons. On some of the fishing grounds a smaller decrease in the average individual size has occurred. Although the proofs for overfishing are not quite so clear as regarding the lobster, the observations tend to show that the species is in need of an increased protection.

III. The deep-sea prawn (*Pandalus*) fishery is rather old. Until the end of the 19th century it was only carried out to a small scale in a restricted area of Drammen Fjord in S. Norway; but then the biologists found large prawn quantities in several of the fjords to the Skagerak and a far bigger fishery set in. A new increase in the fishery set in in 1930 when, mainly by biological researches, it was found that the deep-sea prawn occurred in big quantities in the open Skagerak between 150 and 250 m. depth. The total catch which prior to 1930 only reached ca. 800 tons now rose to 2000 tons.

On the old fishing grounds in the fjords the fishery, however, decreased not only as to the total yield but also as to yield per fishing unit, for instance in the Gullmarfjord where the catch formerly could be 15 tons yearly, in later years only 2—3 tons are caught. In the Oslo Fjord in some places the daily catch per fisherman in the thirties was only 8—13 kg. against formerly some 40 kg.

Also on the newer grounds in the open Skagerak a decrease in catch per fishing unit is observed, and the fishermen who in the beginning of the thirties only fished for prawns in the eastern Skagerak now fish through the whole of the western Skagerak too. The result is that the prawn is now fished for through the whole of its area of distribution. The total yield of the fishery has decreased; in the years 1932—36 the total catch per year was between 2000 and 2200 tons against in the years after the war (45—47) only 1600—1900 tons.

The deep-sea prawn is—due to its mode of propagation—an animal easily subjected to overfishing. It is a protandric hermaphrodite so that all females are large at their first spawning and therefore fished upon. Further the fish-market which already uses the small prawns and shrimps (*Crangon* and *Leander*) are using even the small deep-sea prawns too.

In the Skagerak the stock is composed of 3 age-groups, only very few of the III-group being found.

In August the 0-group (hatched in spring) is 4—5 cm. (total length), the I-group (entering their male season) 9—10 cm., and the II-group (entering the female season) 12—13 cm.

The market uses the prawns down to a size of 8 cm. (total l.) thus fishing upon the I- and II-group. Still smaller prawns are, however, caught in the gears and thrown away again (of course dead) or used for bait. In some cases such small prawns constitute 80 % of the catch.

Considering

1) that large quantities of small immature prawns are caught,
2) that the whole area of distribution is covered by the fishery, and
3) that a decrease in the yield (total yield and per catch unit) is observed it is obvious that the stock of prawns is overfished and in need of protection.

It is on the base of the above-stated observations that the Transition Area Committee has thought it necessary to raise the question of the protection of the marketable crustaceans of the area.

On account of the widely different biology of the species and of the varying methods of the fishery the question of what protection measures should be taken is somewhat complicated, but I should like to stress the fact that the biology of these crustaceans and the commercial fishing methods are so well known that effective measures of protection can be proposed, possibly along the following lines:

1) mesh and gear regulations
2) size-limits
3) closed seasons
4) output of artificially hatched fry.

A meeting of representatives from Denmark, Norway and Sweden—Government officials, biologists and fishery professionals—was held in Oslo on 22. and 23. February 1951, and the following proposals for an agreement were accepted:

(a) The smallest mesh size should permit a gauge 30 mm. broad and 2 mm. thick to pass easily through the gear when wet;
(b) a minimum size for Norway lobster of 15 cm. total length;
(c) it was considered desirable that the size limit of the common lobster should be raised, but the fishermen did not hold the present moment opportune for such a raise;
(d) standing committees of representatives of the three countries should be set up for the co-ordination of research into these crustaceans (deep-sea prawn, common lobster, Norwegian lobster and edible crab) and for making proposals as to further protective measures.

APPENDIX B

Report of the Sub-Committee on the Salmon Fishery in International Waters.

We have carefully examined the answers to a questionnaire sent out to the salmon experts of various European countries, and as a result of a consideration of the answers and of the literature on the subject, we find it possible to come to a short agreed conclusion on this matter. In addition Mr. Sømme has expressed and defined his own especial attitude to the subject in the Addendum.

Although we had at first in mind the summarising of contemporary salmon legislation by Mr. Sømme and the preparation of a note on the causes of mortality in salmon by Dr. Poulsen, we found later that the answers to our questionnaire were such as to make these contributions superfluous at the present stage.

The heads of our conclusions are as follows.

1. The only known occurrence of salmon in fair numbers in international waters outside the Baltic is that reported by M. R. Vibert for the mackerel grounds SW. of the British Isles.

Otherwise there is no evidence of feeding grounds in international waters, nor is there any substantial fishery in such waters far off-shore in the NW. Atlantic area.

2. With the possible exception of the area SW. of the British Isles there is probably no danger to salmon stocks as a result of the fishery of international waters.

3. If the presence of substantial numbers of salmon should be found in the Atlantic area we are not of the opinion that they must at once be the object of restrictive legislation. This is because these grounds may well receive contributions from salmon of virgin and underfished river areas as well as those from wellfished districts, and also because, in the Baltic, where the greater part of the catch is taken from feeding grounds in international waters far from the shore, the species is not thought to be over-exploited.

4. We are not satisfied that the decline in the catch of salmon that has taken place in recent years has been entirely due to fishing.

5. Notwithstanding the conclusions in paragraphs 1 and 2, it cannot be denied that a dangerous situation may arise in special places and the situation should be kept under constant review. In order to do this it will be necessary for more effective statistics to be collected. In making the present report we have been much hindered by the defective nature of the catch-statistics from some countries and we strongly recommend that the matters referred to in this paragraph be brought to the attention of the Salmon and Trout and Statistical Committees.

6. The answers to the questionnaire show that little or no knowledge exists as to questions 2 (mortality in the open sea) and 3 (feeding areas in international waters outside the Baltic). As knowledge of this kind would be important for a consideration of the relative danger to the salmon stock of fisheries in international waters, in coastal waters and in freshwater we recommend that the Salmon and Trout Committee should consider possible means and methods for the acquirement of such knowledge.

(sgd.) R. S. Wimpenny, E. M. Poulsen,
Sven Sømme.

Amsterdam, October 6th 1951.

ADDENDUM

Special Statement.

By

Sven Sømme

Every country possessing a stock of salmon has restrictive laws for the purpose of conserving the salmon runs. If these laws did not exist the salmon runs would have been depleted in almost every civilised country by over-fishing inside territorial waters.

In fact all salmon countries take active steps to conserve their fish in order to maintain and if possible increase the up-river runs. They construct fish ladders, operate hatcheries, control pollution, and attempt to restrict and punish the unlawful capture of salmon. They all aim at securing the optimum catch of salmon by allowing sufficient fish to reach the spawning grounds.

The salmon after feeding in the open sea return to their native country and stream to spawn. The size of the salmon runs and the maintenance of the stock depends entirely upon the success of the laws and cultural work in each country and of the nature of each particular country's streams and rivers.

The statistics relating to the capture of Atlantic salmon are very incomplete in most countries. Few

are able to present accurate figures as to the amount of salmon caught in various years. It is still more difficult to obtain figures to prove over-fishing or under-fishing or that the optimum catch has been secured.

We know that the almon has disappeared from the Rhine, some French rivers, some rivers on the coast of Maine and other areas and that expensive work has been undertaken in order to re-establish the runs. Moreover Dr. W. F. THOMPSON has been able to show that fishing has depleted or distorted runs of the Pacific salmon in the U.S.A. and Alaska. But the Sub-Committee appointed by the Consultative Committee to review the plight of the Atlantic salmon in Europe outside the Baltic and to examine whether it is considered desirable to protect the salmon in the open sea has failed to produce evidence of over-fishing or of danger to the stock of salmon owing to exploitation in the open sea. The material presented from Norway may be considered as a proof that over-fishing is taking place in that country and restrictions applied to some of the rivers have led to a considerable increase in the catches therefrom. Finally M. R. VIBERT has informed the Committee that 130 salmon were caught in the open sea by French mackerel drifters in 1948. Otherwise it has been impossible for the Sub-Committee to present scientific evidence either for or against the existence of any over-fishing of Atlantic salmon or any danger to the stock from fishing in international waters.

I have signed the Report of the Sub-Committee stating these facts, as I can see that a strictly scientific body such as the International Council for the Exploration of the Sea can take no steps to secure restrictions that are not securely based on scientific evidence.

However, I do not in any way feel confident that there is no danger to the stock of salmon from over-fishing in the open sea or outside national waters, and it is my sincere belief that no country possessing and taking care of a stock of salmon of her own would care to see it exploited in international waters beyond the control of restrictions. If such exploitation should be started there are no means of stopping it, as it is evident to all that it is a very difficult matter to obtain international agreement on such restrictions.

The Sub-Committee has asked that the attention of the Salmon and Trout Committee should be drawn to this matter so that the situation may be watched closely in future and an attempt be made to gather material to show us where we are. Nevertheless I am concerned over the situation as a whole, and I feel we would have advanced a very important step if we had been able to agree that the development of salmon fishing in international waters is undesirable. This opinion is based on the probability that, despite the lack of proof, the stocks are already being fully exploited or over-exploited and on the assumption that each country is able to tax its own stock of salmon so as to obtain the optimum catch, and that the maintenance of a stock of salmon in any country is due to the amount of success derived from salmon laws and conservation measures.

Amsterdam, October 6th 1951.

APPENDIX C

Report by a Sub-Committee of the Bureau for considering Publication of a Jubilee Volume.

On 30. September 1951 the Sub-Committee recommended:

1) that the President should write a dedication to the whole Jubilee Volume limited to 500 words over his signature.
2) that the activities of the participating countries since 1927 should be embodied in an introduction and survey limited to 6 pp. (6000 words). The first Vice-President has consented to do the editing of this introduction. The first Delegates would be invited to send to the General Secretary accounts of the activities of their countries, bearing in mind that these will be edited to an average per country of 500 words. There will be no illustrations nor tables in this Introduction.
3) that, considering the value of scientific reviews of the results obtained on some general questions investigated by the Council Chairmen be encouraged to send notes of already published work to the General Secretary for the use of reporters who may consent to act and who would write reviews (5.000 words) on the following subjects:—
   The milieu
   The plankton
   The cycle of nutrient salts
   The transplantation of fish
   The marking of fish
   The detection of fish shoals
   Overfishing
   Applications to industry and policy
4) the reviews should be accompanied by not more than an average of 4 half-page illustrations or tabular material.
5) these proposals are estimated to cost Kr. 5,000.

Reports and Programmes of Committees and Sub-Committees.

Northern Seas Committee.

Acting Chairman: Dr. Å. Vedel Tåning.

I. Proceedings.

The reports mentioned below were presented and discussed:—

1) T. Braarud: "Report on the Phytoplankton from the International Survey of the North Sea, May 1948."
2) Jens Eggvin and J. B. Tait: "Some Results of the International Survey of the North Sea and the Faroe Shetland Channel."
3) Unnsteinn Stefánsson: "Hydrographic observations from the Iceland Sea, especially in 1951."
4) G. C. Trout (presented by M. Graham): "The Growth Pattern of the Cod Otolith."
   "West Barents Sea Otolith Types."
5) Olav Aasen: "Some Results from Mackerel Tagging in Norway."

The discussion touched on the possibility of correlating the hydrographical phenomena in Icelandic, Faroese and West Spitsbergen waters.

Recommendation II, 1 was agreed, proposing the printing, in the *Rapports et Procès-Verbaux*, of Professor Braarud's report with a short review of the hydrographical observations from the North Sea Area, while the other reports should be printed elsewhere. Moreover the general question on a contribution of international hydrographical sections was submitted for consideration by the Hydrographical-Biological Sub-Committee.

II. Recommendations.

The following recommendations were passed:—

1) It is recommended that Professor Braarud's report on the international phytoplankton investigations of the North Sea in May 1948 should be printed in the *Rapports et Procès-Verbaux*, with an introduction of the hydrographical results from the same area by Dr. J. Eggvin, Dr. J. Tait and Mr. J. Smed.

2) It is recommended that the question of continuation of international co-operation following that carried out in the North Sea 1947—1949 should be considered by the Hydrographical-Biological Sub-Committee.

North-Eastern Area Sub-Committee.

In the Chair Mr. Finn Devold in the absence of Mr. Gunnar Rollefsen.

I. Proceedings.

1) Contributions:
Mr. Wimpenny gave some supplementary remarks to Mr. Trout's paper presented by Mr. Graham in an earlier meeting on the cod otoliths from the Arctic.

2) The other part of the proceedings was mainly limited to administrative questions.

3) Mr. Gunnar Rollefsen re-elected Chairman.

II. Programme of Work.

1) The following countries have planned to work in the North-Eastern Area:
   (a) Denmark possibly with a smaller ship for investigations of plaice migrations in the Barents Sea.
   (b) England. The English work is likely to be in the Barents Sea area and a definite programme was promised in the near future.
   (c) France will possibly work with "Président Théodore Tissier" in the same area.
   (d) Norway will continue routine work in the coastal waters and has planned to work with "G. O. Sars" in October-November 1951, March-April 1952, mainly in the Barents Sea.
   (e) Scotland will pay special attention to the drift of haddock larvae from the North Sea into the Norwegian Sea.
2) (a) It was generally agreed that exchange of programme should be made at an earliest possible date in order to get a better co-ordination of the work.
   (b) Mr. Parrish proposed a close co-operation between Scotland and Norway on the haddock programme, and the question will be settled through correspondence.

North-Western Area Sub-Committee.

Chairman: Dr. Å. Vedel Tåning.

I. Proceedings.

1) The Chairman welcomed Dr. Martin as representative of the North West Atlantic Fisheries Commission with which the present Committee hoped to establish an intimate collaboration.

Some few items in the general research programme of the Committee were discussed together with the combined long-term programme for northern areas: a few corrections were made but none of them involving work in the North-Western Area.

2) Communications.

Mr. Friðriksson reported on the stock of cod in Icelandic waters and on the stock of saithe; the year-class 1945 of saithe had proved to be an enormously rich one. Dr. Paul Hansen reported on the West Greenland fishery research work during 1951 and emphasized especially the work on cod and deep-sea prawns, and further on results from marking experiments and the value of hydrographical sections in the area. A report from Mr. Birger Rasmussen on work carried out during 1951 in Davis Strait was read by Mr. Devold, and it was agreed to include it in the administrative report for 1951. Dr. Tåning reported on the peculiar synchronism between prominent year-classes in the stocks of important fish species in low arctic and high boreal waters and the peak years found among several land vertebrates in the northern regions. He proposed that the matter should be considered more closely by all interested in the question of the causes of fluctuations in the great fisheries. A summary dealing with this question was distributed; a report will be published elsewhere.

3) Dr. Å. V. Tåning re-elected Chairman.

II. Programme of Work.

The general programme will be followed, special emphasis being laid on the herring investigations. Details will be arranged by correspondence. The following work (especially work at sea) was promised to be carried out by the various countries represented:

Denmark: A cruise by the "Dana" to the Faroe area in November/December and again in May to August (Faroe area and Greenland); work by "Jens Væver" in Faroe waters. Continuation of the work in Greenland and Faroe waters.

England: Market measurements in spring if required in the Faroe area. Observations from the weather ship "Item".

France: "Président Théodore Tissier" will probably carry out hydrographical and plankton work in Greenland and Icelandic waters.

Iceland: Continuation of work on the same lines as before. "Maria Julia" will be in commission in March/April, May/June and probably also in August/September.

Norway: "G. O. Sars" will carry out a winter programme in the Norwegian Sea, and a summer programme in the same waters. Hired ships will operate in West Greenland waters (hydrography, cod, etc.).

Scotland: Research vessels will operate in Faroe waters at least four times during the year; spring research on spawning of haddock on the Faroe plateau. Plankton records in operation as previously. Market measurements of cod from the Faroe area during the spring.

Programmes of work should be exchanged between the various countries as early as possible, in November and later.

The Sub-Committee on the Farao Question.

The Chairman, Dr. Å. V. Tåning, reported on the work in progress and emphasized the importance of the newly established laboratory in Thorshavn. Its work will for the time being especially concern such investigations as relate to the work of the Sub-Committee, i. e., age assessment of cod, research on the spawning area of cod, intensity of fishery in the area proposed to be closed, etc. The members promised to carry out such work as would be of immediate interest, e. g., market measurements, delimitation of spawning grounds, etc. (See above under II, England and Scotland).

North Sea Sub-Committee.

Dr. C. E. Lucas in the Chair.

I. Proceedings.

Contributions were made by

M. Desbrosses (France): "Observations sur le Merlan de la Manche Orientale."

Mr. Ellis (Scotland): "Further Experiments on the Shrinkage of Trawl Cod-End Meshes."

"Experiments to Investigate the Escape of Fish through different parts of the Trawl."

Mr. Parrish and Mr. Pope (Scotland): "Further Results on the Effects of using Small-Mesh Covers: Effects on the Catches of the Escape Sizes of Fish."

Mr. Margetts (England): "Underwater Photography of a Trawl in Action" (including the showing of a film).

Dr. Lucas elected Chairman.

II. Programme of Work.

Preliminary drafts of the English-Scottish programmes for work during 1952 were on the table. Every representative was asked to ensure the circulation of such programmes as early as possible, so that the maximum of collaboration might be achieved and any unprofitable duplication of efforts avoided.

Transition Area Sub-Committee.

Chairman: Dr. Erik M. Poulsen.

I. Proceedings.

The Chairman remembered the late Chairman of the Committee, Dr. H. Blegvad; the members stood in silence for a minute.

1) Communications and work carried out during the year were delivered by various members, the results being compared and discussed.

2) Dr. A. R. Molander read a paper on the stock of sprat in Swedish waters and on its relation to the fishery and to fluctuations in hydrographic matters. Point II, 1 was adopted.

3) The Chairman reported on the meeting of representatives from Denmark, Norway and Sweden in February 1951 on protection of crustaceans. The Committee discussed the results of the meeting and the ways and means for further investigations of the stock, especially as to the possibility of raising the size limit of the common lobster.

4) The question of more protection of the plaice was debated but it was agreed that the case could not be dealt with in a satisfactory way as long as German representatives did not partake in the work of the Committee.

5) The results of the coastal investigations regarding the density of the 0-group stocks of plaice and flounder were discussed, and Point II, 2 was passed.

6) The Chairman was re-elected.

II. Programme of Work.

The programme of the previous year was adopted with the following additions:

1) The relations between fluctuations in the stock of sprat and variations in hydrographic conditions and in fishing intensity should be studied in the whole area.

2) The results of the studies carried out through a long series of years as to the density of the stock of 0-group plaice and flounder along the shores should be worked up and a report based on as well Danish as Swedish material should be prepared as soon as possible.

Baltic Area Sub-Committee.

Chairman: Dr. Chr. Hessle.

I. Proceedings.

1) Short reports were given of the investigations in the different countries in 1951.
2) The following communications were made and discussed:
   (a) Dr. Aage J. C. Jensen: "Changes in the Stocks of Fish in the Baltic contemporaneously to Changes in Salinity and Temperature in recent years."
   (b) Dr. Gunnar Granqvist: "Hydrographical Investigations in the Gulf of Bothnia."
   (c) Dr. Chr. Hessle: "Further Communications about a Plankton Disease in the Gulf of Bothnia."
   (d) Dr. J. Hult: "Summary of a report by Dr. Alm about the Salmon Fisheries in the Baltic Precincts in the Seasons 1946/47—1950/51."
   (e) Dr. Aage J. C. Jensen: "The Eel Disease in the Baltic" (short report).
3) Dr. Chr. Hessle re-elected Chairman.

II. Programme of Work.

It was agreed to re-adopt this year's programme as that of the coming year.

Atlantic Committee.

Chairman: Professor JEAN LE GALL.

I. Proceedings.

1) Progress of Work.

Questions only of common interest to the work of the three Sub-Committees of the Atlantic Committee were dealt with in this Committee meeting.

2) Communications.

A. Clupeids (Herring excepted).

J. FURNESTIN: "On the Influence of Temperature on the Migrations of the Sardine."

A discussion followed dealing with the influence of wind on the phenomenon of upwelling and on the necessity of increasing the hydrological observations concerning the concentrations of sardines and other Atlantic clupeids.

R. LETACONNOUX: "Marking of Sardines in France."

J. LE GALL: "Charts of the Sardine Distribution."

M. J. FURNESTIN will prepare a draft chart.

B. Tunny.

J. LE GALL: "Tunny Ichthyometrics."

Dr. DIEUZEIDE: "Larvae of *Thunnus thynnus* caught in the Mediterranean during the cruise of the 'Président Théodore Tissier' in 1950."

M. FRADE: "On the Histology of the Ovary of a Female *Germo alalunga* caught in the sea in 1950 by the 'Président Théodore Tissier'."

C. Hake.

J. LE GALL: "On the necessity for new researches into the hake of the Atlantic."

J. CADENAT: "On the various types of hake in the Atlantic."

R. LETACONNOUX: "Observations on the hake of the Atlantic and of the Mediterranean."

CL. MAURIN: "Second and third notes on the Moroccan hake."

H. HELDT: "On the hake of the Mediterranean."

3) The Committee prepared and discussed the programmes of hake work and recommended that certain ichthyometrical investigations should be undertaken.

4) The Committee expressed the wish that the meeting of the Atlantic Committee should in future follow the European and African Atlantic Slope Sub-Committees meetings.

5) Professor J. DE GALL re-elected Chairman. He will also act as liaison between the Atlantic Committees and the International Commission for the Scientific Exploration of the Mediterranean.

II. Programme of Work.

The investigations into the biology and the behaviour of the clupeids (herring excepted), scombrids (mackerel), and tunnies will be continued along the present lines. It was recommended that the hydrological observations on the fishing grounds of the pelagic fishes should be increased.

The preparation of charts showing the distribution of the sardine will be continued (M. J. FURNESTIN is in charge of the compilation of the documents).

The hake investigations will be continued according to a programme discussed and adjusted during the meeting. The results of these investigations will be brought before the next general assembly.

III. Recommendations.

The Atlantic Committee recommended

(a) that the communications presented to the Committee on the tunny, the sardine and the hake should be published as soon as possible in one of the series of the International Council.

(b) that the attempts to detect shoals of fish (especially of sardine) should be continued and encouraged.

African Atlantic Slope Sub-Committee.

Chairman: Dr. J. FURNESTIN.

I. Proceedings.

The Chairman presented the following scientific communications:—

CL. MAURIN: "Preliminary note on the shrimps of Morocco."

MARIE-LOUISE FAURE: "Fourth note on the zooplankton of the Moroccan coastal zone."

R. COUPÉ: "Two *Dentex* from Morocco."

R. GAIL: "The Horse Mackerel of Morocco."

M. ROSSIGNOL: "Preliminary Note on the Mullets of Morocco."

A further communication, not in writing, was given by M. FURNESTIN on the presence of *Alosa alosa* in the south of Morocco and its ascent into the oued Draa (usually dry) in the spring of 1951 during a flood.

Dr. HICKLING drew attention to the establishment at Kissy, near Freetown, Gold Coast, of a permanent research station with a vessel, the "Cape St. Mary", of 37 m. and 380 CV. equipped for trawling, and of two vessels of 10 m. equipped with echo-sounders for the study of *Sardinella* and *Ethmalosa*.

The Chairman emphasized the development of research facilities in western Africa, from Morocco to the Belgian Congo.

Dr. J. FURNESTIN re-elected Chairman.

II. Programme of Work.

Portugal: Statistics of trawlings on the Mauritanian coast.

Spain: Bathymetric studies and mapping of the section Cape Barbas to Cape Blanc.

Morocco: Quarterly observations along 16 perpendiculars between the Straits of Gibraltar and the Canary Isles (temperature, salinity, plankton, submarine geology).

AOF: Mapping, study of the benthic and fish fauna ("Gérard Tréca"), systematics concerning clupeids, mullets and tunnies.

English Territories: Study of the fauna of the continental shelf and of the fishes of the Gulf of Guinea.

A common programme for 1952, submitted by Dr. Hickling, was adopted. It consists of a biometric study (measurements, sex, vertebrae) and of the biology (environmental conditions) of the West African species of *Sardinella* and *Ethmalosa*.

European Atlantic Slope Sub-Committee.

Chairman: M. F. Navarro.

Proceedings.

1) Communications.

J. Smed: "Monthly Anomalies of the Surface Temperature in the Celtic Sea during the years 1903—39 and 1945—50."

R. Letaconnoux: "The Stock of Hake in 1950."

MM. Fernandez and Navarro: "The Sardine of Santander in 1950."

J. Cuesta: "The Spawning Season of the Sardine and Anchovy in the Waters of Santander."

MM. Oliver and Navarro: "The Sardine of Vigo in 1950."

2) Dr. A. de M. Ramalho elected Chairman.

Western Mediterranean Sub-Committee.

Chairman: M. Henri Heldt.

I. Proceedings.

1) The following communications were presented:—

A. Clupeids.

MM. Oliver and Navarro: "The sardine of the Balearic Isles in 1950."

M. Andreu: "The sardine of the eastern coast of Spain."

MM. Oliver and Navarro: "*Sardinella aurita* of the Balearic Isles in 1950."

B. Tunnies.

M. Desbrosses presented a vertebra from a *Thunnus thynnus* caught on the coast of Brittany, with clearly defined winter rings.

M. Heldt reported on the results of an undertaking carried out in 1951 in Tunis waters by two Yugoslavian seiners and consisting in tunny fishing by purse nets, to follow up the trials started in 1950 as a result of the discovery of tunny concentrations in the Gulf of Gabès, during the cruise in 1949 of the "Président Théodore Tissier". The catches were successful—from 12 tons (*Thunnus thynnus*) to 35 tons (*Sarda*) per fishing trip.

M. Heldt mentioned further the increase in the returns of the tunny boats (from 100 tons in 1949 to 600 tons in 1950 and 750 tons in 1951) which can be ascribed to the substitution of the "Atlantic" for the "Mediterranean" net.

2) Various questions. M. Heldt informed the members of the results of the sponge culture trials carried out in Tunis and of the value of the methods used.

3) Reorganization of the Atlantic Committee. The Chairman referred to the conditions prevailing when the Western Mediterranean Sub-Committee was established in 1948, at the time when the Commission Internationale pour l'Exploration de la Méditerranée had not yet been reconstituted. Since this Commission has now taken up work again the existence of a Mediterranean Committee under the International Council is no longer justified.

Certain questions, however, being common to both sectors, it seemed desirable that there should be some contact between the two international organizations.

Prof. le Gall thought it would be enough to add representatives from Egypt, Greece, Italy, and Yugoslavia to the present members of the Committee.

After some discussion a suggestion made by Dr. Ramalho was accepted, that it should be left to Prof. le Gall—who happened to be at the same time Chairman of the Atlantic Committee and General Secretary of the Mediterranean Commission—to bring about the contact between the two sectors for the questions which are common to both.

Prof. le Gall agreed to this arrangement. He further emphazised the fact that the suppression of the Western Mediterranean Sub-Committee had been effected on the proposal of its own Chairman. He complimented the Sub-Committee on its activity and on the importance of the work accomplished.

Dr. Ramalho, on his part, extended in friendly words his sympathy to the leaving Chairman.

Pelagic Committee.

In the Chair: Mr. Árni Friðriksson.

Proceedings.

All contributions in relation to the pelagic fishes having already been dealt with in preceding meetings of other Committees this meeting was devoted to papers regarding herring, especially tagging experiments.

The following contributions were presented:—

1) Mr. Olav Aasen: "The Icelandic-Norwegian Herring Taggings in 1951."
2) Dr. Henry Wood: "Scottish Herring Tagging Experiments in the North-Western North Sea."
3) Dr. H. Höglund: "Swedish Herring Taggings."
4) Dr. Aage J. C. Jensen: "Danish Tagging Experiments on Herring."
5) M. R. Letaconnoux: "French Taggings of Pilchard."
6) Professor Gilis: "Herring Investigations in Belgium."
7) Dr. Aage J. C. Jensen: "Occurrence of Small Herring in Danish Waters."
8) Mr. B. B. Parrish and Mr. R. E. Craig: "The Use of the Echometer in Fish Location and its Application to Problems of Herring Distribution in the Scottish Herring Fisheries."
9) Mr. Finn Devold presented moving pictures from the last two summer cruises with "G. O. Sars".

Herring Sub-Committee.

Chairman: Mr. Árni Friðriksson.

I. Proceedings.

As all the contributions on scientific herring work had been dealt with in the Pelagic Meeting the programme of this Committee was mainly limited to administrative questions.

Mr. Árni Friðriksson re-elected Chairman.

II. Programme of Work.

1) It was decided to conform to a common plan for searching after herring and to carry out hydrographical work in the area of the Icelandic-Norwegian herring tribe during the months of May and June 1952. The Danish research vessel "Dana", the "G. O. Sars" from Norway, and "Maria Julia" from Iceland should cover the whole area from Norway to Iceland and from Spitsbergen and Bear Island to the Faroes, whereafter a meeting was planned to take place at Seydisfjord at the east coast of Iceland about 25. June. Possibly also the Swedish research vessel "Skagerak" would be able to participate in the work.

2) It was also decided that the "Dana" and the "G. O. Sars" should work in the area north of the Faroes in order to trace the track of spawning migration towards the west coast of Norway.

3) Most of the countries will continue the marking experiments or commence taggings where no such work has been carried out earlier.

4) It was proposed by the Chairman that attempts should be made to reduce the volume of the herring reports appearing annually in the *Annales Biologiques* and to make the contributions more uniform.

III. Recommendations.

It was recommended that

1) the collecting of information regarding the use of echo-sounders and asdic for fishing and scientific purposes should be continued for an additional year, and arrangements should be made, possibly by a special Sub-Committee, for the preparation of a report after the work is completed.

2) Hydrographic Observations should be made on actual herring spawning grounds whenever possible.

3) A recommendation of the Special Scientific Meeting on Herring in Edinburgh 1949 is reaffirmed and specially brought to the attention of the countries fishing on herring in the North Sea.

The recommendation was as follows:—

That in view of the F.A.O. meeting at the Hague in August 1949, each country should take steps to keep a close watch for signs of stock changes and the possible causes of stock changes in the various herring fisheries. It is also recommended that steps be taken by every country to provide statistics of unit catches as well as of total catches (i. e., catches per unit of gear, and distinguishing where necessary between different classes of craft and gear).

Salmon and Trout Committee.

Chairman: Mr. Sven Sømme.

I. Proceedings.

The Chairman welcomed Dr. William F. Thompson, Research Professor, University of Washington, Seattle, U.S.A.

He then honoured the memory of the late Chairman, Professor Knut Dahl. The members stood in silence for a minute.

Dr. W. F. Thompson, then read his paper "An Outline for Salmon Research in Alaska".

The members reported on their research work in 1951. This season has been the second year of the second three-year programme for extensive salmon taggings. An attempt should now be made to survey the results so far achieved. Mr. Sømme said his office would be able to draw general maps of the tagging results provided material be sent him within the next few months from the participating countries.

The Chairman gave a short report on the work done by the Sub-Committee for considering the desirability of protecting salmon in the open sea. Although the Sub-Committee has not yet concluded its work, it is already evident that it is necessary to pay attention to the following points:—

1) More effective statistics.
2) Evidence of feeding grounds for salmon in the open sea.
3) The mortality of salmon in the open sea.

The members of the Committee were asked to bear these points in mind, and the situation should be carefully watched.

Mr. R. Vibert gave the interesting information that a tagged smolt had been recaptured in the open sea, 750 km. away from the place where it was tagged, and furthermore that French mackerel drift-netters during 1948 had caught 130 adult salmon, averaging 5 kg. in the open sea at about 50° N. Lat., 8°30′ W. Long. (Greenw.).

In the absence of Prof. M. Fontaine Mr. Vibert read a summary of his paper on the relationship between salmon migrations and the salt contents of the spawning stream. The conclusion was that in the river Adour no such relationship exists.

Mr. Sømme re-elected Chairman.

II. Programme of Work.

It was decided that the tagging programme should be continued also in 1952. The Committee would then at the next meeting consider the work done during the two three-year periods.

Shellfish Committee.

Chairman: Dr. B. Havinga.

I. Proceedings.

1. Opening.

The Chairman welcomed the members at the first meeting of this newly established Committee (Rapp. et Proc.-Verb. Vol. No. 129, I, pp. 45 and 28).

2. Crustacea.

Mr. Ch. Gilis reported on his work on the influence of the size of the meshes of the shrimp-trawl on the size of the shrimp and the size of the catch. These investigations will be published in the *Annales Biologiques*.

The Chairman made additional remarks on statistical investigations carried out for promoting a better knowledge of the influence of fishing on the stock of shrimp.

A discussion ensued on minimum sizes of different Crustacea, particularly *Crangon*, *Pandalus* and *Homarus*.

3. Mollusca.

The Chairman reported on a meeting convened by Prof. le Gall and held in Paris in February 1951 on *Mytilicola intestinalis*. The contributions for this meeting will be published in the *Revue des Travaux* de l'Office Scientifique et Technique des Pêches Maritimes.

4. Extension of Activity.

The Chairman then referred to the recommendation of the Special Scientific Meeting on Shellfish in 1949 (Rapp. et Proc.-Verb. Vol. No. 127, I, p. 33) which had expressed the wish for co-operation between institutes working on marine cultures in other parts of the world.

After a brief discussion Recommendation III below was accepted.

5. The Chairman re-elected.

II. Programme of Work.

A. Crustacea.

The collaboration between Belgian and Dutch experts will be continued and it was suggested that the English shrimp experts be contacted.

B. Mollusca.

In Paris an extensive programme has been set up that covers all the work for the near future.

Mr. WAUGH presented a letter by Dr. H. A. COLE with a series of problems regarding the rearing of oyster larvae. He insisted on closer co-operation. It was agreed that now that we know another's work and problems the contact will be obtained by correspondence and if possible by mutual visits.

On behalf of the Committee a letter will be sent to Dr. COLE.

III. Recommendation.

The Shellfish Committee recommends that steps be taken to promote collaboration between workers on marine cultures in other parts of the world and that F.A.O. be asked to assist by preparing annually a list giving the name and address of the various institutes engaged in work of this nature, together with results and programmes.

Hydrographical Committee.

Chairman: Prof. H. U. SVERDRUP.

I. Proceedings.

1) The Hydrographer reported on the work carried out by the Service Hydrographique since the last Meeting.

2) Dr. EGGVIN reported on the work of the Hydrographical-Biological Sub-Committee. The Committee strongly supported the Sub-Committee's two recommendations (II, 1 and 2). As proposed by the specially appointed *ad hoc* Sub-Committee (I, 2) Recommendation 1 was carried.

3) Dr. CARRUTHERS reported on the work of the Sub-Committee for Considering and Arranging Tests of Methods of Observing Currents.

It was decided to dissolve the Sub-Committee under its present terms of reference, and to reconstitute it with the same members (Messrs. CARRUTHERS (Chairman), FAURE, GROEN, and LUMBY) as a Sub-Committee for promoting Measurements of Currents in all their Aspects. The Sub-Committee should be free to co-opt members with regard to the biological aspects of the work.

On the request of the Chairman, Dr. BÖHNECKE reported on the hydrographic investigations carried out this year in the North Sea by the German Hydrographic Institute and gave a description of the paddle-wheel current-meter.

The Committee was of the opinion that there was an urgent need for further current measurements in the Southern Bight, especially during the plaice spawning season. Recommendation 2 was carried.

4) Preliminary programmes for hydrographic work at sea were tabled. A co-ordination of the various programmes in a scheme of approximately synoptic observations from a fairly large area was discussed. Recommendation 3 was carried.

Mr. LEE asked the members in charge of oceanographic work from Atlantic Weather Ships to forward their programmes for this work to Lft.-Cdr. LUMBY who at the Brussels meeting of the International Association of Physical Oceanography was elected Chairman of the Committee on Wheather Ships.

5) Mr. LEE presented a Memorandum by Lft.-Cdr. LUMBY on the monthly charts of sea surface conditions put out by the Lowestoft Laboratory.

Several members stressed the importance of these charts to fishery biologists and hydrographers and expressed the hope that the charts would be continued.

Dr. CARRUTHERS observed that if the time-consuming work done at Lowestoft to produce the wind data for the Lumby monthly charts should lead to the cutting-out of that part of them, the data of German origin being regularly circulated would still be forth-coming; also the British lightship wind data supplied with the sheets of currents data would still be made available and in increasing amount. Recommendation 4 was carried.

6) Dr. CARRUTHERS presented an Atlas, by LAWFORD and PARMENTER, on Wind Conditions over the Seas around Britain.

Dr. KULLENBERG stressed the great importance of this work on account of the close connexion between wind and brood strength proved by Dr. CARRUTHERS and his colleagues in their recent work, and by Dr. MOLANDER years ago. Recommendation 5 was carried.

7) Communications.

Dr. FØYN: "An Apparatus for Measuring the Density of Sea Water."

Mr. POSTMA: "Water Movements, Transport of Suspended Matter and Phosphorus in the Dutch Wadden Sea."

Mr. LEE: "The Connexion between some Echo-Sounder Traces and Bathythermograph Lowerings in the Barents Sea."

Dr. COOPER: "Water Movements over the Continental Slope in Relation to Fisheries Hydrography. I. Hydrography."

8) Prof. SVERDRUP re-elected Chairman.

II. Recommendations.

1) The Hydrographical Committee recommends that the Hydrographical-Biological Sub-Committee be continued for a further year.

2) It is strongly hoped that the three-nation currents observing campaign worked in June 1951 in the Southern North Sea be repeated at some time of

special fisheries research interest, the next spawning time of the plaice in particular.

The President of the German Hydrographic Institute is accordingly requested to make appropriate representations in his country, and the two concerned experts of the Netherlands and Great Britain are asked to try to enlist the participation of their respective navies as before.

3) The Hydrographical Committee notes with satisfaction the steps already being taken by various Area Committes to co-ordinate their hydrographical programmes, and feels that the common benefit can be greatly advanced by these and further arrangements of this kind.

4) Monthly charts of sea surface conditions.

(a) On the basis of expressions received from biologists as to the usefulness of the monthly charts put out by the Lowestoft Laboratory the Hydrographical Committee strongly recommends that these charts be continued.

(b) If it be not possible to continue the charts in their entirety it is nevertheless hoped that an adequate wind service may remain in operation.

(c) The Hydrographical Committee wishes to extend its thanks to the Lowestoft Laboratory for having undertaken the preparation and issue of these charts up to the present time.

5) The Hydrographical Committee hopes that the British Atlas: "Wind Conditions over the Seas around Britain: Characteristic Air Flows representative of Calendar Months as worked out for the Half-Century now ended" by A. L. LAWFORD and H. C. PARMENTER, with an Introduction by J. N. CARRUTHERS, will be published without the delay that would ensue in the Council's series of publications owing to present heavy commitments.

Sub-Committee for Organization of Combined Hydrographical-Biological Investigations.

Chairman: Dr. JENS EGGVIN.

I. Proceedings.

1) The Chairman reported on the work carried out during the year and referred to the reports given in the Committee of Northern Seas by Professor BRAARUD, Dr. TAIT and himself.

2) Co-ordination of future work.

Dr. TÅNING proposed that a small body of biologists and hydrographers should meet to point out the sections which were indispensable for the understanding of the hydrographical conditions of the area.

Professor SVERDRUP was of the opinion that the Sub-Committee according to its terms of reference had now carried out its work, and that new hydrographical-biological investigations would be initiated.

After some discussion an *ad hoc* Sub-Committee consisting of Messrs. EGGVIN, BRAARUD, TÅNING and TAIT was appointed to consider whether the Hydrographical-Biological Sub-Committee had fulfilled its task, and report to the Hydrographical Committee.

3) Publications.

Recommendations 1 and 2 were carried.

4) Lowestoft monthly charts of temperature, salinity and wind.

Mr. GRAHAM gave some information on the charts and Dr. CARRUTHERS made some remarks concerning a repetition of the current measurements campaign in the southern North Sea. Both questions requiring guidance from the biologists it was decided to treat them at the Special Scientific Meeting, if possible.

As the Chairman did not wish to stand for re-election Dr. TAIT was elected Chairman if the Sub-Committee is continued.

II. Recommendations.

1) The Sub-Committee endorses the recommendation of the Committee of Northern Seas as to the publication of Professor BRAARUD's report on the phytoplankton distribution.

2) The Sub-Committee is of opinion that a complete report on the hydrographical investigations organized by the Sub-Committee should be published by the Council. Specific recommendations as to publications will be made when the reports have been completed.

Plankton Committee.

In the Chair: Professor T. BRAARUD.

Proceedings.

The Chairman, Dr. P. JESPERSEN, was unable to attend the meeting. On account of his appointment as General Secretary to the Council a new Chairman had to be elected. Professor T. BRAARUD was proposed and took the chair.

A paper by Professor E. STEEMAN NIELSEN: "Investigations on the production of organic matter during the 'Galathea'-Expedition" was read by Mr. WIMPENNY.

Mr. R. S. WIMPENNY gave an account on "Variations of the fat content of net plankton off the English coast in 1948—51."

Mr. K. F. WIBORG reported on "Plankton observations from the Norwegian Sea and adjacent areas during 1948—50."

Dr. C. E. LUCAS raised the question whether a request should be made to the Oceanographic Laboratory in Leith to have plankton recorder results distributed in the same way as the charts on temperature and salinity conditions in the North Sea and the Faroe-Shetland area. It was decided to have the matter discussed in the Sub-Committee for Combined Hydrographical-Biological Investigations.

Statistical Committee.

Chairman: Dr. NILS ROSÉN.

I. Proceedings.

The Chairman welcomed as guests, Dr. W. R. MARTIN, Secretary to the new International Commission for the Northwest Atlantic Fisheries, with which organisation the Council will co-operate, and Mr. G. M. GERHARDSEN and Mr. W. H. SCHUSTER from F.A.O.

The *Bulletin Statistique* for 1947 was laid before the Committee.

The Chairman said that all material for *Bulletin Statistique* 1948 had been received from the member countries and was in the press, and that forms to be filled out for 1949 and 1950 had been sent to the member countries.

During a discussion concerning the co-operation between F.A.O., the new International Commission for the Northwest Atlantic Fisheries and the Council wishes were expressed that these organisations should consider any methods for making their statistics comparable.

Dr. NILS ROSÉN re-elected Chairman.

II. Recommendation.

The member countries are reminded to give their statistical figures as round fresh fish together with the conversion factors used.

VERSION FRANÇAISE

RÉUNIONS SCIENTIFIQUES SPÉCIALES

A. Réunion Générale.

Président : Michael Graham.

Le Président ouvre la séance et invite les auteurs des contributions suivantes à se résumer brièvement.

A. R. Molander: "Remarques sur l'Overfishing". Le Président du Conseil, en l'absence de l'auteur, présente des diagrammes qui montrent la diminution de la densité et du poids des églefins sur les pêcheries suédoises, diminution qu'il attribue à la pêche, attendu qu'il y a des changements dans la proportion des poissons de grande taille et de taille moyenne, comparativement aux poissons de petite taille. C'est surtout la senne danoise qui a été employée ces dernières années.

A. J. C. Jensen présente une communication non écrite; il calcule l'accroissement proportionnel d'une récolte stable provenant de l'extension du maillage comparativement à celui qu'on obtient par une diminution des efforts de pêche et conclut en faveur de l'élargissement des mailles.

L. K. Boerema: "Les Stocks de Poissons Démersaux sur les lieux de pêche des navires hollandais en Mer du Nord", présente des tableaux montrant qu'actuellement en Mer du Nord, on pêche trop et au moins autant qu'avant guerre. Les différences obtenues entre les apports des chalutiers et ceux des cotres, peuvent s'expliquer par la différence de l'âge des poissons pêchés.

Ch. Gilis: "Position de la Belgique vis-à-vis de l'Overfishing Conférence, Londres 1946", montre que les stocks pêchés par les chalutiers belges en Mer du Nord ont diminué de 44.2 % depuis 1946, atteignant un niveau à peine supérieur à celui des années d'avant-guerre. Il montre l'importance des mesures à prendre pour y remédier.

R. Letaconnoux: "Considérations Statistiques sur le rendement de la pêche après guerre", traitant du stock de diverses espèces sur le plateau continental entre le Golfe de Gascogne et l'Irlande, montre que leur niveau en 1950 s'approche de celui de 1937—39 pour diverses espèces, mais est nettement inférieur à celui de 1937—39 pour le merlu. Pour quelques espèces, cependant, (*P. centrodontus*, *L. megastoma*, *Mullus*, etc.) le niveau demeure supérieur à celui d'avant-guerre; la diminution de l'ensemble est due surtout à celle des merlus, grands et petits.

Une note rédigée à Lowestoft: "Le Merlu sur la côte occidentale" conclut que, principalement près de l'Irlande, le stock de merlu sera bientôt tombé au-dessous du niveau d'avant-guerre, ce qui est prouvé par le nombre des captures de diverses tailles.

Revenant en Mer du Nord, une autre note de Lowestoft montre une rapide diminution des stocks, avec ceux de l'églefin (dans les pêches anglaises) et de la plie dans une situation critique; la proportion des plies qui survivent étant comparable à celle des années d'avant-guerre.

B. B. Parrish présente un rapport sur le "Stock d'Eglefins après guerre en Mer du Nord" et indique un taux de mortalité totale de 64 %, égal à la valeur d'avant-guerre. Un graphique de la production comparée à la mortalité due à la pêche démontre l'"Overfishing".

"L'Etat des Stocks d'Eglefins aux Féroës de 1914 à 1950" est le sujet d'un travail assez complet de R. Jones, qui doit être publié ailleurs. Il arrive à la conclusion que le stock est "surpêché" en se basant sur l'estimation de paramètres.

Le Président regrette, qu'en raison de l'ouverture tardive de la réunion, il ne soit pas possible de discuter ces rapports; il rappelle, cependant, que leur sujet est familier et que l'étude critique de ces questions est continue dans tous les pays membres. Il donne la parole au Professeur W. F. Thompson, de l'Université de Washington, Seattle, U.S.A., pour la présentation de son exposé sur "les Conditions des Stocks de Flétans dans le Pacifique".

Pour la pêche au flétan dans le Pacifique, la question est encore débattue dans certaines régions des U.S.A., à savoir: si les changements avant et pendant la règlementation sont imputables surtout à des causes naturelles. Le Professeur, Dr. W. F. Thompson présente des statistiques qui semblent règler cette question. Il appelle, par exemple, l'attention sur un fait qui s'est répété à trois reprises. C'est un accroissement d'effort de pêche, accompagné d'une augmentation

temporaire des captures et d'une diminution de l'importance du stock; si les causes étaient naturelles, les captures et l'importance du stock se seraient accrus en même temps. Autres points: l'époque du changement dans le stock coïncidant avec l'introduction de la règlementation; la suite régulière des changements dans la production année par année depuis la règlementation; l'échelonnement des niveaux du stock suivant la distance du marché. L'association de ces tests offre d'extrêmes difficultés à ceux qui voudraient attribuer les changements à des causes naturelles.

Le Dr. Thompson présente aussi un exposé de H. A. Dunlop et F. H. Bell sur la condition actuelle des stocks. Certains fonds, dans le secteur général, montrent une accumulation du stock, d'autres une diminution; ce que les auteurs considèrent comme une conséquence du contrôle de la flotte de pêche.

B. Réunion sur l'Hydrographie des Pêcheries.

Organisateur et Président : Dr. C. E. Lucas. — Rapporteur : Dr. E. M. Poulsen.

I. Compte-rendu.

1. Introduction par le Président.
   Les mémoires suivants sont lus:
2. Prof. H. U. Sverdrup: "Sur la Place de l'Hydrographie dans la Recherche sur les Pêches."
3. Dr. H. O. Bull: "Valeur de nos Connaissances sur le Comportement du Poisson en Relation avec l'Hydrographie."
4. Mlle Eva Henly: "Influence de la Teneur en Gaz de l'Eau de Mer sur le Poisson et les Larves de Poissons."
5. Mr. F. S. Russell: "Relation entre les Recherches sur le Plancton et l'Hydrographie des Pêcheries".
6. Dr. J. H. Fraser: "Corrélations Hydro-Biologiques aux Entrées au nord de la Mer du Nord en 1947".
7. Dr. L. H. N. Cooper: "Mouvements des Eaux au-dessus du Plateau Continental en relation avec l'Hydrographie des Pêcheries".
8. Dr. A. J. C. Jensen: "Influence des Facteurs hydrographiques sur les Stocks de Poissons et les Pêches dans le Secteur de Transition".
9. Dr. H. Alander: "Hydrographie des Pêcheries dans la Baltique".
10. Dr. H. Einarsson: "Parallélisme dans la Production des Classes annuelles des Races saisonnières chez le Hareng d'Islande et sa Signification".
11. Lt. V. F. C. Veley: "Fluctuations des Classes annuelles chez le Sprat".
12. Mr. A. J. Lee: "Influence de l'Hydrographie sur la Pêcherie de Morue de l'Ile aux Ours".
13. Mr. F. Devold: "A la Recherche du Grand Hareng en Mer de Norvège" (et communication verbale).
14. Mr. R. E. Craig: "Programme de l'Ecosse sur l'Hydrographie du Hareng, 1951".
15. Dr. L. A. Walford: "Synopsis des Résultats de l'Hydrographie des Pêcheries aux U.S.A.".
16. Dr. D. Rochford: "Les Problèmes biologiques de l'Huître Australienne".
17. Dr. G. Böhnecke: "Quelques Remarques sur la Position de l'Allemagne dans l'Hydrographie des Pêcheries."

Après discussion les recommandations suivantes sont adoptées.

II. Recommandations après modifications par le Comité Consultatif.

1) Les comptes-rendus de cette réunion ont montré qu'une association de recherches biologiques, hydrographiques, météorologiques, physiologiques ou statistiques a fait avancer notre connaissance de la productivité biologique, du comportement des stocks de poissons, et aussi des pêcheries elles-mêmes; il est recommandé que les recherches soient poursuivies dans cette voie.

2) Il est recommandé que les comités établissent d'une manière aussi définitive que possible les problèmes qu'ils désirent voir attaquer et résoudre par les hydrographes.

3) Il est recommandé que des études succinctes sur le comportement normal de nos principaux poissons comestibles soient poursuivies soit par l'observation directe soit par l'expérience du laboratoire.

4) Il est recommandé que des efforts soient faits pour encourager la rédaction de monographies décrivant les conditions hydrographiques dans les mers qui intéressent les chercheurs sur les pêcheries.

5) Il est recommandé que des pêches expérimentales sur une échelle commerciale et autres formes d'évaluation soient exécutées simultanément aux observations hydrographiques, ce qui est un moyen direct de montrer la dépendance des stocks de poisson vis à vis des conditions hydrographiques, et une aide directe aux pêcheries.

6) Il est recommandé que les buts immédiats du Comité du Plancton comprennent (i) des études sur les conditions de la base de la productivité en mer, et (ii) un essai, par des observations sur une série d'années, pour relier le nombre de survivants d'une classe annuelle de poissons à la présence ou à l'absence d'un ou plusieurs types d'organismes planctoniques, à la fois prédateurs et producteurs de nourriture, pendant le début de la vie planctonique du poisson.

7) Il est recommandé que les contributions à cette réunion soient publiées par le Conseil sous forme d'un rapport spécial. Les contributions qui sont ou seront publiées ailleurs devraient paraître sous forme d'extraits dans le rapport.

8) Il est recommandé que les résultats obtenus sur la morue près de l'Ile aux Ours et sur le hareng au large de la Mer de Norvège soint portés à l'attention des pêcheurs de tous les pays.

A. Pêche à la morue près de l'Ile aux Ours.

(i) Sur les fonds à l'ouest de l'Ile aux Ours, au début de l'été et à nouveau à l'autome, l'eau de type atlantique atteignant le banc peut provoquer de bonnes captures au chalut, la température du fond étant voisine de 3.75° C.

(ii) A l'ouest du 20° de longitude Est, une température du fond inférieure à 1.75° C. est généralement défavorable, mais peut provoquer des concentrations de morues près de ses limites.

B. Hareng dans la Mer de Norvège.

Pendant les 4 dernières années (1948—1951) des bancs de harengs ont été observés dans des secteurs étendus au-dessus de l'eau profonde au nord et au nord-est des Iles Féroës, en Mai—Juin.

Plus tard au cours de l'été, les bancs semblent se concentrer dans la région bordière du courant arctique de l'est de l'Islande, entre 66° L. N. et Jan Mayen. Au cours des deux étés récents, les recherches norvégiennes ont montré que les bancs de harengs sont aussi nombreux depuis Jan Mayen vers le nord-est, au contact entre les eaux atlantiques et arctiques, la température étant approximativement de 6—8° C. au large.

L'été dernier (1951) les drifters ont fait de bonnes captures de harengs, à 80—100 milles marins à l'est de Langanes, Islande, ainsi que dans le secteur de Jan Mayen.

Rapport et Recommandations du Comité Consultatif.

Président : Mr. Michael Graham.

I. Compte-rendu.

1) Le Président fait part de la perte subie par la mort du Dr. H. Blegvad et du Professeur Knut Dahl. Les membres observent une minute de silence.

2) Organisation du travail des Comités.

Les questions soulevées par la nouvelle organisation sont discutées à la première réunion. Les problèmes d'intérêt général doivent être discutés dans les nouveaux comités élargis, et les membres sont priés de choisir de tels sujets parmi les contributions à leurs comités. Les sujets pour la réunion des Mers Nordiques sont discutés et agréés. Les membres sont priés d'annoncer leurs programmes au tableau.

Mr. Graham est invité à remplir les fonctions de Président à la Réunion Générale, le Dr. Lucas à la Réunion Scientifique Spéciale; le Dr. Tåning et Mr. Friðriksson sont nommés Présidents respectivement du Comité des Mers Nordiques et du Comité Pélagique.

Le Dr. Poulsen, comme rapporteur de la Réunion Scientifique Spéciale, propose d'examiner si la réunion fera l'objet de recommandations, et dans l'affirmative de les rédiger; il est laissé à sa discrétion le soin de préparer ou non un résumé.

A la seconde réunion, à la suggestion du Président, les enseignements de la session sont discutés et les Recommandations II, 2 a-c sont acceptées. Les Organisateurs et Présidents des grands comités pour la session de 1952 sont nommés: Mr. Rollefsen pour les Mers Nordiques, Mr. Friðriksson pour le Comité Pélagique, et le Prof. le Gall pour le Comité Atlantique. Aucune réunion scientifique spéciale ne prendra place en 1952.

3) Rapport sur l'Avancement des Travaux.

Le rapport, qui a été distribué à l'avance, est accepté et deux sous-rapports, l'un rédigé par le Dr. Poulsen sur la protection de *Pandalus borealis*, et l'autre par le Sous-Comité sur la Pêche au Saumon dans les Eaux Internationales, sont distribués durant la réunion et acceptés avec reconnaissance. Ces rapports sont donnés en Appendices A et B[1]). Mr. Wimpenny attire l'attention sur son article 5 (App. B) qui intéresse le Comité du Saumon et de la Truite et le Comité Statistique.

4) Annales Biologiques.

Les épreuves de l'édition pour 1950 sont déposées devant le Comité. La possibilité de faire des économies est discutée à la première réunion, et un petit Sous-Comité comprenant le Dr. Tåning, Mr. Wimpenny, le Dr. Jensen et le Secrétaire pour information, est désigné. A la seconde réunion, Mr. Wimpenny fait un court exposé des solutions envisagées. Il estime important de tenir compte des pontes annuelles naturelles de certaines espèces, par exemple celle de la plie finit le 31 Mars. Le hareng, ajoute le Président du Conseil, pourrait nécessiter une considération spéciale à ce point-de-vue.

Il est décidé que (a) à la réunion annuelle, seules des épreuves détachées seront mises à la disposition des Présidents intéressés; (b) les manuscrits devront parvenir au Secrétaire Général le plus tôt possible après Décembre, mais normalement pas plus tard que le 1er Juin; (c) le matériel devra être étudié par années légales à moins d'avis contraire.

5) Rapports généraux des Comités.

Les rapports de tous les Comités, qui ont été distribués, sont discutés et adoptés au cours de la deuxième réunion. Recommandation 1.

Considérant le rapport du Sous-Comité de la Méditerranée Occidentale, les deux derniers paragraphes remerciant M. Henri Heldt sont approuvés. Quant au rapport du Comité Statistique et sa suggestion de coopération avec F.A.O., il est recommandé que le Conseil accorde des facilités pour une réunion d'experts européens au Château de Charlottenlund, si F.A.O. décide de convoquer une telle réunion.

En ce qui concerne les demandes de publication présentées par divers Comités, les Recommandations II, 3 a-c sont adoptées.

Les recommandations du Comité des Crustacés et Mollusques et du Comité Hydrographique (1 et 4) sont fortement appuyées par le Comité (Recom. 3).

Le Président expose en outre que, agissant au nom de l'Editeur du Journal en son absence, il a accepté une version quelque peu réduite de la note du Dr. Thompson sur le flétan, et le court rapport de Dunlop et Bell sur la Commission Pacifique du Flétan.

Les recommandations de la Réunion Scientifique Spéciale sont discutées assez longuement, et après quelques amendements non litigieux, elles sont acceptées. La forme modifiée est donnée dans le rapport de la réunion.

6) Autre Travail.

(a) Rapport Jubilaire. Le Président du Conseil présente au Comité deux suggestions sur la rédaction d'un Volume Jubilaire: l'une faite par lui-même,

[1]) Voir texte anglais pp. 19—22.

l'autre par un Sous-Comité de circonstance nommé par le Bureau en Mai. Après une longue discussion, il apparaît que le Comité préfère la proposition du Sous-Comité du Bureau, imprimée à l'Appendice C[1]).

(b) Guide pour Marques de Poissons. A la suggestion du Dr. HAVINGA, le Comité est d'accord pour demander au Bureau de rechercher la meilleure méthode pour le mettre à jour, et de le publier à nouveau dans le Journal.

7) Election du Président.

Sur la proposition du Prof. LE GALL, M. MICHAEL GRAHAM est réélu à l'unanimité.

II. Recommandations.

1. Rapports généraux des Comités.

Les rapports et recommandations des Comités sont acceptés, avec les réserves notées ci-dessous.

2. Organisation du Travail en Comité.

(a) La nouvelle organisation est reconnue satisfaisante dans l'ensemble, mais il est décidé que:
  (i) Organisateurs et Présidents des grands comités doivent être désignés bien à l'avance.
  (ii) Les Sous-Comités doivent se réunir autant que possible avant leurs comités de tutelle, sans préjudice de la voie à suivre pour les recommandations de sous-comités.

(b) Il est pris note en outre des suggestions suivantes:
  (i) les Réunions Spéciales devraient parfois être avancées dans le programme,
  (ii) les programmes détaillés des contributions devraient être à la disposition de chaque membre à son arrivée,
  (iii) la Réunion Générale et les Réunions de Comités doivent être préparées à l'avance aussi soigneusement que possible, sans qu'il y ait obligation de tenir une Réunion Générale à moins qu'en Mai le matériel suffisant soit parvenu au Président du Comité Consultatif.

(c) Il est reconnu que si un seul représentant par pays a le droit et la responsabilité de vote (statuts règle 14), la participation de plusieurs membres par pays aux réunions est laissée à l'appréciation des Présidents, qui doivent se souvenir que les Comités ne doivent pas être trop encombrés.

3. Publications.

(a) Que le rapport du Prof. BRAARUD soit publié dans la série des *Rapports et Procès-Verbaux*.

(b) Que les contributions à la Réunion Scientifique Spéciale sur l'Hydrographie des Pêcheries soient publiées dans un rapport spécial, à l'exception de celles qui sont parues ailleurs, dont il ne sera donné qu'un extrait.

(c) Que la publication des travaux suivants soit approuvée en principe, les manuscrits devant être examinés par le Comité Editorial quand ils seront à sa disposition:
  (i) Le rapport hydrographique sur le travail combiné en Mer du Nord.
  (ii) La compilation sur le merlu et les nouvelles observations sur les thons recommandées par le Comité Atlantique.
  (iii) Il est recommandé qu'un résumé des notes sur le marquage du hareng, présentées à la Réunion Pélagique, soit préparé et publié avant la prochaine réunion annuelle du Conseil.

4. Travail de Coopération.

Le Comité Consultatif approuve fortement les recommandations des Comités suivants:

(a) Sous-Comité des Crustacés et Mollusques. Que le Conseil écrive à F.A.O. pour demander son aide dans la préparation d'une liste annuelle des noms et adresses des divers instituts poursuivant un travail sur les cultures marines, en même temps que les résultats et les programmes.

(b) Comité Hydrographique.
  (i) Que le Sous-Comité pour les Recherches Combinées Hydro-Biologiques continue pendant une année.
  (ii) Il est souhaité que les cartes des conditions à la surface de la mer puissent être continuées actuellement.

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[1]) Voir texte anglais, p. 22.

Rapports et Programmes des Comités et des Sous-Comités.

Comité des Mers Nordiques.

Le Dr. Å. Vedel Tåning préside.

I. Compte-rendu.

Les rapports mentionnés ci-dessous sont présentés et discutés:—

1) T. Braarud: "Rapport sur le phytoplancton d'après les observations internationales faites en Mer du Nord, Mai 1948."
2) Jens Eggvin et J. B. Tait: "Quelques résultats des observations internationales faites en Mer du Nord et dans le canal des Féroës."
3) Unnsteinn Stefansson: "Observations hydrologiques en Mer d'Islande spécialement en 1951."
4) G. C. Trout (présenté par M. Graham): "Les éléments de croissance des otolithes de morue." "Catégories d'otolithes de morue dans l'ouest de la Mer de Barentz."
5) Olav Aasen: "Quelques résultats de marquage de maquereaux en Norvège."

La discussion porte sur la possibilité de chercher la corrélation des phénomènes hydrologiques observés dans le secteur de l'Islande, des îles Féroës et de l'ouest du Spitzberg.

La recommandation II, 1 proposant la publication du rapport du Professeur Braarud, dans les *Rapports et Procès-Verbaux*, accompagné d'un court résumé sur les observations hydrologiques des secteurs de la Mer du Nord, est adoptée; les autres rapports seront publiés ailleurs. En outre, la question générale d'une contribution basée sur les résultats des sections hydrologiques internationales est proposée pour la considération du Sous-Comité de l'Hydro-Biologie.

II. Recommandations.

Les recommandations suivantes sont adoptées:—

1) Il est recommandé que la rapport du Professeur Braarud sur les recherches internationales du phytoplancton de la Mer du Nord en Mai 1948 soit imprimé dans les *Rapports et Procès-Verbaux*, avec une introduction sur les résultats hydrologiques obtenus dans le même secteur par le Dr. J. Eggvin, Dr. J. Tait et M. J. Smed.

2) Il est recommandé que la question de prolongation de la coopération internationale, succédant à celle établie pour la Mer du Nord en 1947—49, soit examinée par le Sous-Comité de l'Hydro-Biologie.

Sous-Comité du Secteur Nord-Est.

M. Finn Devold préside en l'absence de M. Gunnar Rollefsen.

I. Compte-rendu.

1) Contributions:

Mr. Wimpenny fait quelques remarques supplémentaires à la note de Mr. Trout présentée par Mr. Graham dans une précédente réunion sur les otolithes de morues de l'Arctique.

2) L'autre partie du compte-rendu est surtout limitée aux questions administratives.

3) Mr. Gunnar Rollefsen est réélu Président.

II. Programme de Travail.

1) Les pays suivants tracent leur plan de travail dans le Secteur Nord-Est:
   (a) Angleterre. Les travaux s'effectueront vraisemblablement en Mer de Barentz et un programme défini est prévu pour d'ici peu.
   (b) Danemark. Possibilité de faire des recherches avec un petit bateau sur les migrations de la plie en Mer de Barentz.
   (c) Ecosse. Etude des mouvements pélagiques des larves d'églefin de la Mer du Nord à la Mer de Norvège.
   (d) France. Travaux éventuels avec le "Président Théodore Tissier" en Mer de Barentz.
   (e) Norvège. Travaux habituels dans les eaux côtières et établissement d'un plan de travail avec le "G. O. Sars" en Octobre-Novembre 1951, Mars-Avril 1952, principalement en Mer de Barentz.
2) (a) Les membres sont d'accord pour que l'échange des programmes se fasse le plus tôt possible, afin d'obtenir une meilleure coordination du travail.
   (b) Mr. Parrish propose une étroite coopération entre l'Ecosse et la Norvège en ce qui concerne les recherches sur l'églefin; la question sera réglée par correspondance.

Sous-Comité du Secteur Nord-Quest.

Président: Dr. Å. Vedel Tåning.

I. Compte-rendu.

1) Le Président souhaite la bienvenue au Dr. Martin comme représentant de la Commission des Pêches du N. O. Atlantique avec laquelle le présent Comité espère établir une étroite collaboration.

Discussion sur quelques points du programme général de recherches, ainsi que sur le programme combiné, à longue-terme, des secteurs nordiques: quelques modifications sont apportées mais aucune d'elles n'entraîne des travaux dans le Secteur Nord-Ouest.

2) Communications:

Mr. Friðriksson fait un compte-rendu concernant le stock de morue dans les eaux islandaises et le stock de colin noir; la classe 1945 de colin noir s'est montrée extraordinairement importante. Le Dr. Paul Hansen fait un compte-rendu sur les recherches sur les pêches dans l'ouest du Groënland en 1951 et signale spécialement le travail sur la morue et les crevettes (*Pandalus borealis*), ainsi que les résultats des marquages et l'importance des sections hydrologiques dans le secteur. Un rapport de M. Birger Rasmussen sur le travail effectué en 1951 dans le Détroit de Davis est lu par M. Devold; il est convenu que ce rapport figurera dans le rapport administratif pour 1951. Le Dr. Tåning expose le synchronisme particulier constaté entre les classes annuelles les plus importantes des stocks des principales espèces de poissons des eaux arctico-boréales et les années de la plus grande production des vertébrés terrestres des régions nordiques. Il propose que ces données soient particulièrement prises en considération dans les investigations sur les causes de fluctuations des grandes pêches. Un résumé de cette question est distribué; un rapport sera publié ailleurs.

3) Le Dr. Tåning est réélu Président.

II. Programme de Travail.

Le programme général sera suivi, une importance particulière étant attribuée aux investigations sur le hareng. Les détails seront mis au point par correspondance. Les travaux suivants (spécialement travaux à la mer) doivent être exécutés par les différents pays représentés:—

Angleterre: Mensurations sur les marchés, au printemps, si nécessaire, dans la région des îles Féroës. Observations à bord du bateau météorologique "Item".

Danemark: Une croisière du "Dana" dans le secteur des îles Féroës en Novembre/Décembre et de Mai à Août (secteur Féroës et Groënland); travaux du "Jens Væver" dans les eaux des îles Féroës. Continuation du travail dans les eaux du Groënland et des îles Féroës.

Ecosse: Des bateaux de recherches opéreront dans les eaux des îles Féroës au moins 4 fois dans l'année; recherches au printemps sur les pontes d'églefin sur le plateau continental des îles Féroës. Des pêches de plancton seront effectuées comme auparavant. Mensurations, sur les marchés, de morues du secteur des îles Féroës pendant le printemps.

France: Le "Président Théodore Tissier" effectuera éventuellement des travaux d'hydrologie et de plancton dans les eaux de l'Islande et du Groënland.

Islande: Suite des travaux selon le même plan que précédemment. "Maria Julia" sera armée en Mars/Avril, Mai/Juin et probablement aussi en Août/Septembre.

Norvège: Le "G. O. Sars" effectuera une croisière d'hiver dans la Mer de Norvège, et une croisière d'été dans les mêmes eaux. Des bateaux loués opéreront dans les eaux de l'ouest du Groënland (hydrologie, morue, etc.).

Les programmes de travail seront échangés aussitôt que possible, dès Novembre et plus tard, entre les différents pays.

III. Sous-Comité de la Question des Féroës

Le Président, Dr. Å. V. Tåning, fait le compte-rendu du travail en cours et souligne l'importance du Laboratoire de Thorshavn, nouvellement établi. Son travail pour le moment consistera surtout en recherches semblables à celles du Sous-Comité, c'est à dire, répartition par classes d'âge de la morue, recherches sur l'aire de ponte de la morue, intensité de la pêche dans la région que l'on se propose d'interdire, etc. Les membres s'engagent à exécuter un travail d'un intérêt immédiat: mensurations sur les marchés, délimitation des lieux de ponte, etc. (Voir ci-dessus, II, Angleterre et Ecosse).

Sous-Comité de la Mer du Nord.

Le Dr. C. E. Lucas préside.

I. Comte-rendu.

Les contributions suivantes sont présentées:—

M. Desbrosses (France): "Observations sur le Merlan de la Manche Orientale."

Mr. Ellis (Ecosse): "Suite des Expériences sur le Rétrécissement des mailles du sac de chalut."

"Expériences pour examiner le Passage du Poisson à travers les différentes parties du chalut."

Mr. Parrish & Mr. Pope (Ecosse): "Nouveaux Résultats concernant les Effets de l'Utilisation des 'Housses à petites Mailles': Effets Sélectifs sur les Captures de Poissons."
Mr. Margetts (Angleterre): "Photographie Sous-Marine d'un chalut en action" (avec projection du film).
Le Dr. Lucas est élu Président.

II. Programme de Travail.

Les projets préliminaires des programmes de travaux anglais-écossais pour l'année 1952 sont distribués. Chaque représentant est invité à assurer aussitôt que possible la diffusion de tels programmes afin que le maximum de collaboration puisse être accompli et éviter de gaspiller des efforts.

Comité Atlantique.

Président: Professeur Jean le Gall.

I. Compte-rendu.

1) Avancement des travaux.

Seules, les questions présentant un intérêt commun parmi les travaux des trois Sous-Comités du Comité Atlantique sont reprises dans ce dernier Comité.

2) Communications.

A. Clupéidés (Hareng excepté).

J. Furnestin: "Note sur l'influence de la température sur les déplacements de la sardine."

Une discussion s'engage au sujet de l'influence des vents sur le phénomène de résurgence et sur la nécessité de multiplier les observations hydrologiques sur les concentrations de sardines et des autres Clupéidés atlantiques.

R. Letaconnoux: "Marquage de sardines en France."
J. le Gall: "Cartes de distribution de la sardine."
M. J. Furnestin établira un projet de carte.

B. Thonidés.

J. le Gall: "Ichthyométrie des Thonidés."
Dr. Dieuzeide: "Larves de thon rouge recueillies en Méditerranée au cours de la campagne du 'Président Théodore Tissier' en 1950."
M. Frade: "Sur l'histologie de l'ovaire d'un germon femelle capturé en Mer par le 'Président Théodore Tissier' en 1950."

C. Merlu.

J. le Gall: "Nécessité de nouvelles recherches sur les merlus de l'Atlantique."
J. Cadenat: "Sur les diverses espèces de merlus de l'Atlantique."
R. Letaconnoux: "Observations sur des merlus de l'Atlantique et de la Méditerranée."
Cl. Maurin: "2ème et 3ème note sur le merlu marocain."
H. Heldt: "Sur le merlu de la Méditerranée."

3) Le Comité élabore et discute les programmes de travaux sur le merlu et recommande l'étude d'un certain nombre de recherches ichthyométriques.

4) Le Comité exprime le désir que la réunion du Comité Atlantique soit placée, à l'avenir, après les réunions des Sous-Comités du Plateau Continental Européen et du Plateau Continental Africain.

5) Le Professeur J. le Gall est réélu Président. Il assurera également la liaison des Comités Atlantiques avec la Commission Internationale pour l'Exploration Scientifique de la Mer Méditerranée.

II. Programme de Travail.

Les recherches entreprises sur la biologie et le comportement des Clupéidés (hareng excepté), des Scombridés (maquereau), des Thonidés, seront poursuivies suivant les mêmes programmes. Il est recommandé de multiplier les observations hydrologiques sur les lieux de pêche de ces poissons pélagiques.

L'élaboration des cartes de distribution de la sardine sera continuée (M. J. Furnestin est chargé de la compilation des documents).

Les recherches sur le merlu (*Merlucius merluccius*) seront continuées suivant un programme discuté et mis au point au cours de la séance. Les résultats de ces recherches seront rapportés au cours de la prochaine assemblée plénière.

III. Recommandations.

Le Comité Atlantique recommande

1) que les communications présentées au Comité sur le thon, la sardine et le merlu soient publiées et paraissent aussitôt que possible dans une des éditions du Conseil International;

2) que les essais de détection des bancs de poissons (en particulier de la sardine) soient continués et encouragés.

Sous-Comité du Plateau Continental Européen.

Président: M. F. Navarro.

I. Compte-rendu.

1) Communications.

J. Smed: "Monthly anomalies of the Surface Temperature in the Celtic Sea during the years 1903—39 and 1945—50."

R. Letaconnoux: "Le stock de Merlu en 1950."

MM. Fernandez et Navarro: "La Sardine de Santander en 1950."

J. Cuesta: "The spawning season of the Sardine and Anchovy in the waters of Santander."

MM. Oliver et Navarro: "La Sardine de Vigo en 1950."

2) M. le Dr. A. de M. Ramalho est élu Président.

Sous-Comité Atlantique Africain.

Président: Dr. J. Furnestin.

I. Compte-rendu.

Le Président présente les communications scientifiques suivantes:

Cl. Maurin: "Note préliminaire sur les crevettes du Maroc."

Marie-Louise Faure: "Quatrième note sur le zooplancton de la zone côtière marocaine."

R. Coupé: "Deux Dentex du Maroc."

R. Gail: "Le saurel du Maroc."

M. Rossignol: "Note préliminaire sur les muges du Maroc."

Puis une communication non écrite est faite par M. Furnestin sur la présence d'*Alosa alosa* dans le sud du Maroc et sa remontée dans l'oued Draa (habituellement à sec) au printemps 1951 à l'occasion d'une crue.

Dr. Hickling signale la création, à Kissy, près de Freetown (Côte de l'Or) d'une station permanente de recherche avec un navire de 37 m. et 380 CV., le "Cape St. Mary", pour la pêche au chalut et deux bateaux de 10 m. munis d'échosondeurs pour l'étude des sardinelles et ethmaloses.

Le Président souligne le développement des moyens de recherches en Afrique occidentale, depuis le Maroc jusqu'au Congo belge.

Le Dr. Furnestin est réélu Président.

II. Programme de Travail.

Portugal: Statistique de pêche au chalut sur la côte de Mauritanie.

Espagne: Etude bathymétrique et cartographie du Cap Barbas au Cap Blanc.

Maroc: Observations trimestrielles le long de 16 perpendiculaires entre le détroit de Gibraltar et les îles Canaries (température, salinité, plancton, géologie sous-marine).

AOF: Carthographie, étude de la faune benthique et de pêche ("Gérard Tréca") — Systématique des Clupéidés, Mugilidés et Thonidés.

Territoires anglais: Etude de la faune du Plateau Continental et des poissons pélagiques du Golfe de Guinée.

Un programme commun pour 1952 proposé par Dr. Hickling a été adopté. Il consiste en l'étude biométrique (mensurations, évolution sexuelle, vertèbres) et biologique (conditions de milieu) des espèces de *Sardinella* et *Ethmalosa* de l'Afrique occidentale.

Sous-Comité de la Méditerranée Occidentale.

Président: M. Henri Heldt.

I. Compte-rendu.

1) Les communications suivantes sont présentées:

A. Clupéidés.

MM. Oliver et Navarro: "La sardine des Baléares en 1950."

M. Andreu: "La sardine de la côte est d'Espagne."

MM. Oliver et Navarro: "La sardinelle des Baléares en 1950."

B. Thonidés.

M. Desbrosses présente une vertèbre d'un thon rouge pêché sur les côtes de Bretagne sur laquelle les anneaux d'hiver sont nettement marqués.

M. Heldt rend compte des résultats d'une entreprise de pêche des Thonidés au filet tournant effectuée en 1951 dans les eaux tunisiennes par deux bateaux-seineurs yougoslaves. Cette entreprise poursuivait les essais de 1950 décidés à la suite de la découverte, lors de la croisière 1949 du "Président Théodore Tissier" de concentrations de Thonidés dans le Golfe de Gabès. Des captures allant de 12 tonnes (thon rouge) à 35 tonnes (Sarda) par calée furent réussies.

M. Heldt signale par ailleurs l'augmentation du rendement des thonaires (passant de 100 tonnes (1949) à 600 t. (1950) et 750 t. (1951)) que l'on peut rapporter à la substitution du filet type "atlantique" au filet méditerranéen.

2) Questions diverses. M. Heldt indique les résultats des essais de spongicultures effectués en Tunisie et la valeur des procédés expérimentés.

3) Réorganisation du Comité Atlantique. Le Président rappelle les conditions dans lesquelles le "Sous-Comité de la Méditerranée Occidentale" fut créé en 1948, alors que la "Commission Internationale pour l'Exploration Scientifique de la Mer Méditerranée" n'était pas encore reconstituée. Cette Commission ayant repris ses travaux, l'existence d'un Comité Méditerranéen au Conseil International ne se justifie plus.

Toutefois, certains problèmes étant communs aux deux secteurs, il apparait utile qu'une liaison soit assurée entre les deux organismes internationaux.

Le Prof. le Gall pense qu'il suffirait d'ajouter des représentants de l'Egypte, de la Grèce, de l'Italie et de la Yougoslavie aux membres actuels du Comité.

Après un échange de vues, une proposition du Dr. Ramalho est adoptée, laissant au Prof. le Gall — qui se trouve être à la fois Président du Comité Atlantique et Secrétaire Général de la Commission de la Méditerranée — le soin d'effectuer la liaison entre les deux secteurs pour les questions qui leur sont communes.

Le Prof. le Gall approuve ces dispositions. Il tient à souligner que la suppresssion du "Sous-Comité de la Méditerranée Occidentale" est intervenue sur la proposition même de son Président. Il félicite le Sous-Comité de son activité et de l'importance du travail réalisé.

Le Dr. Ramalho, à son tour, exprime, en termes amicaux, des sentiments de sympathie à l'égard du Président sortant.

Comité Pélagique.

M. Árni Friðriksson préside.

I. Compte-rendu.

Toutes les contributions concernant les poissons pélagiques ayant déjà été examinées dans les réunions précédentes des autres Comités, cette réunion est consacrée aux notes concernant le hareng, en particulier celles relatives aux expériences de marquage.

Les contributions suivantes sont présentées:—

1) M. Olav Aasen: "Les Marquages de Harengs en Islande et Norvège en 1951."
2) Dr. Henry Wood: "Marquages de Harengs dans le nord-ouest de la Mer du Nord."
3) Dr. H. Höglund: "Marquages de Harengs en Suède."
4) Dr. Aage J. C. Jensen: "Expériences de Marquages du Hareng au Danemark."
5) M. R. Letaconnoux: "Marquages de Sardines en France."
6) Professeur Gilis: "Recherches sur le Hareng en Belgique."
7) Dr. Aage J. C. Jensen: "Présence de petits Harengs dans les Eaux Danoises."
8) Mr. B. B. Parrish et Mr. R. E. Craig: "L'Emploi du Sondeur à ultra-son pour reconnaître la Présence de Poissons et surtout des Harengs dans les Pêcheries Ecossaises."
9) Mr. Finn Devold présente des films se rapportant aux deux dernières croisières d'été du "G. O. Sars."

Sous-Comité du Hareng.

Président: M. Árni Friðriksson.

I. Compte-rendu.

Toutes les contributions sur les travaux scientifiques sur le hareng ayant été traitées au Comité Pélagique, le programme de ce Comité est surtout limité aux questions administratives.

Mr. Árni Friðriksson est réélu Président.

II. Programme de Travail.

1) Le Comité décide de se conformer à un plan commun de recherches sur le hareng et d'effectuer un travail hydrologique dans les régions de répartition des harengs d'Islande-Norvège, pendant les mois de Mai et Juin 1952. Le navire de recherches danois

"Dana", le "G. O. Sars", de Norvège, et "Maria Julia", d'Islande, prospecteront les secteurs de la Norvège à l'Islande et du Spitzberg et de l'Ile aux Ours aux Féroës; une réunion est ensuite projetée à Seydisfjord sur la côte est de l'Islande vers le 25 Juin. Il est possible aussi que le navire de recherches suédois "Skagerak" participe aux recherches.

2) Il est aussi décidé que le "Dana" et le "G. O. Sars" travailleront dans le secteur nord des Féroës en vue de déterminer le trajet des harengs en concentrations de ponte en direction de la côte ouest de Norvège.

3) La plupart des pays continueront les expériences de marquages ou commenceront les marquages dans le cas où ce travail n'aurait pas encore débuté.

4) Le Président propose que l'on s'efforce de réduire les rapports concernant le hareng, publiés annuellement dans les *Annales Biologiques*, et de présenter des contributions plus homogènes.

III. Recommandations.

Il est recommandé:—

1) De rassembler pendant encore une année des informations sur l'emploi des sondeurs à ultra-sons et Asdic utilisés pour la pêche et dans des buts scientifiques; des dispositions seront éventuellement prises par un Sous-Comité spécial pour la préparation d'un rapport quand le travail sera terminé.

2) Des observations hydrologiques seront faites sur les lieux de ponte du hareng aussi souvent que possible.

3) Une recommandation de la Réunion Scientifique Spéciale du Hareng d'Edimbourg en 1949 est est renouvelée et portée spécialement à l'attention des pays pêchant le hareng dans la Mer du Nord.

La recommandation est la suivante:—

Que, compte-tenu de la réunion de F.A.O. qui a eu lieu à La Haye en Août 1949, chaque pays s'efforce d'apporter une attention vigilante aux signes de variations de stock et à leurs causes possibles dans les diverses pêcheries de harengs. On recommande aussi que tous les pays fassent leur possible pour fournir les statistiques des captures par unité, ainsi que celles des captures totales (p. ex. les captures par unité d'engin, en distinguant quand ce sera nécessaire entre les différentes sortes de navires et d'engins).

Comité du Saumon et de la Truite.

Président: M. Sven Sømme.

I. Compte-rendu.

Le Président souhaite la bienvenue au Dr. William F. Thompson, Research Professor à l'Université de Washington, Seattle, U.S.A.

Il honore ensuite la mémoire du dernier Président, le Professeur Knut Dahl. Les membres du Comité observent une minute de silence.

Le Dr. W. F. Thompson lit une communication sur "Un programme de recherches sur le Saumon en Alaska".

Les membres du Comité rapportent leurs travaux de recherches en 1951. Cette saison a été la seconde année du deuxième programme de trois ans pour des marquages étendus de saumons. Un effort doit maintenant être fait pour analyser les résultats déjà obtenus. M. Sømme déclare que son Bureau sera capable de faire des cartes générales des résultats des marquages à condition que les éléments lui soient fournis au cours des prochains mois par les pays participants.

Le Président donne lecture d'un bref rapport du travail effectué par le Sous-Comité pour juger de l'opportunité de protéger le saumon en pleine mer. Bien que le Sous-Comité n'ait pas encore terminé son travail, il est déjà évident qu'il est nécessaire d'attirer l'attention sur les points suivants:—

1) Davantage de statistiques efficaces.

2) Evidence de zones de nourriture du saumon en plaine mer.

3) Mortalité du saumon en pleine mer.

Il est demandé aux membres du Comité de se souvenir de ces divers points et la situation devra être soigneusement examinée.

M. R. Vibert donne l'indication intéressante d'un smolt marqué et recapturé en pleine mer, à 750 km. de son lieu de marquage. Il signale de plus que les pêcheurs français au filet dérivant ont capturé en 1948 en pleine mer, par environ 50° N. de latitude et 8°30′ W. de longitude (Greenwich), 130 saumons adultes pesant en moyenne 5 kg.

En l'absence du Professeur Fontaine, M. Vibert lit un résumé de son travail sur la relation entre les migrations du saumon et la teneur en sels de la frayére en rivière. Il en conclut que dans l'Adour aucune relation n'existe.

M. Sømme est réélu Président.

II. Programme de Travail.

Il est décidé que le programme de marquages sera continué en 1952. Le Comité lors de sa prochaine réunion examinera alors le travail effectué au cours des deux périodes de trois ans.

Comité des Mollusques et Crustacés.

Président: Dr. B. Havinga.

I. Compte-rendu.

1) Ouverture.

Le Président souhaite la bienvenue aux membres assistant à la première réunion de ce Comité nouvellement créé. (Rapp. et Proc.-Verb. Vol. No. 129, I, pp. 45 et 28.).

2) Crustacés.

Mr. Ch. Gilis donne un compte-rendu de son travail sur l'influence du maillage du chalut à crevettes sur la taille des crevettes et l'importance des captures. Ces travaux seront publiés dans les *Annales Biologiques*.

Le Président ajoute des remarques sur les recherches statistiques poursuivies afin d'obtenir une meilleure connaissance sur l'influence de la pêche sur le stock de crevettes.

Une discussion y fait suite sur la taille minimum de divers crustacés particulièrement *Crangon*, *Pandalus* et *Homarus*.

3) Mollusques.

Le Président fait un rapport sur la réunion provoquée par le Prof. le Gall et tenue à Paris en Février 1951 au sujet du *Mytilicola intestinalis*. Les contributions à cette réunion seront publiées dans la *Revue des Travaux* de l'Office Scientifique et Technique des Pêches Maritimes.

4) Extension d'Activité.

Le Président se réfère alors à la recommandation de la Réunion Scientifique Spéciale sur les Mollusques et Crustacés de 1949 (Rapp. et Proc-.Verb. Vol. No. 127, I, p. 33) qui a exprimé le souhait d'une coopération entre les institutions travaillant sur les cultures marines en d'autres parties du monde.

Après une brève discussion la Recommandation III ci-dessous est adoptée.

5) Le Président est réélu.

II. Programme de Travail.

A. Crustacés.

La collaboration entre les experts belges et hollandais sera poursuivie et il est suggéré de contacter les experts anglais de la crevette.

B. Mollusques.

A Paris a été établi un important programme qui représente tout le travail de l'année à venir.

Mr. Waugh présente une lettre du Dr. H. A. Cole contenant une série de problèmes se rapportant à l'élevage des larves d'huîtres. Il insiste sur une coopération plus étroite. Il est admis que, maintenant que nous connaissons les travaux et les problèmes des uns et des autres, le contact sera obtenu par correspondance et si possible par des visites mutuelles.

Au nom du Comité, une lettre sera adressée au Dr. Cole.

III. Recommandations.

Le Comité des Mollusques et Crustacés recommande qu'un effort soit fait pour établir une collaboration entre les chercheurs en d'autres pays intéressés aux cultures marines et qu'il soit demandé à F.A.O. de donner son aide en préparant une liste annuelle des noms et adresses des diverses institutions engagées dans un travail de ce genre ainsi que des résultats et des programmes.

Comité Hydrographique.

Président: Prof. H. U. Sverdrup.

I. Compte-rendu.

1) L'Hydrographe fait un rapport sur le travail effectué par le Service Hydrographique depuis la dernière réunion.

2) Le Dr. Eggvin rapporte le travail du Sous-Comité Hydro-Biologique. Le Comité appuie fortement les deux recommandations du Sous-Comité (II, 1 et 2). Sur la proposition du Sous-Comité *ad hoc* spécialement désigné (I, 2) la Recommandation 1 est adoptée.

3) Le Dr. Carruthers présente le travail du Sous-Comité pour l'Examen et la Mise au Point des Méthodes d'Observation des Courants.

Il est décidé de supprimer le Comité sous son actuelle dénomination et de le reconstituer avec les mêmes membres (MM. Carruthers (Président), Faure, Groen et Lumby) comme Sous-Comité pour l'Extension des Mesures de Courants sous toutes leurs formes. Le Sous-Comité sera libre de choisir des membres en considération de l'aspect biologique du travail.

A la demande du Président, le Dr. Böhnecke rapporte les recherches hydrographiques poursuivies cette année dans la Mer du Nord par l'Institut Hydrographique Allemand et donne une description d'un courantomètre à roue à aube.

Le Comité émet l'opinion qu'il y a nécessité urgente de plus amples mesures de courants dans la partie méridionale de la Mer du Nord, spécialement durant l'époque de ponte de la plie. La Recommandation 2 est adoptée.

4) Les programmes préliminaires des travaux hydrographiques en mer sont distribués. La coordination des divers programmes est discutée en vue d'établir si possible des observations synoptiques dans un vaste secteur. La Recommandation 3 est adoptée.

Mr. Lee demande aux membres qui ont la charge du travail océanographique à bord des navires météorologiques de présenter leurs programmes au Lft.-Cdr. Lumby qui a été élu Président du Comité des navires météorologiques à la réunion de Bruxelles de l'Association Internationale d'Océanographie Physique.

5) Mr. Lee présente un Mémorandum du Lft.-Cdr. Lumby sur les cartes mensuelles des conditions de la mer en surface établies par le laboratoire de Lowestoft.

Plusieurs membres soulignent l'importance de ces cartes pour les biologistes et hydrographes des pêcheries et expriment le voeu que ces cartes soient continuées.

Le Dr. Carruthers observe que si le travail ardu fait à Lowestoft pour produire les données sur le vent pour les cartes mensuelles de Lumby doit conduire à l'exclusion de ces données, les observations d'origine allemande, qui sont régulièrement distribuées, seront encore prêtes à paraître; les données du bateau-feu anglais sur le vent fournies avec les feuilles de renseignements sur les courants seront également encore disponibles et en nombre accru. La Recommandation 4 est adoptée.

6) Le Dr. Carruthers présente un atlas par Lawford et Parmenter sur les conditions de vent sur les mers autour de l'Angleterre.

Le Dr. Kullenberg souligne la grande importance de ce travail en raison de la relation étroite entre les vents et l'importance des jeunes classes prouvée par le Dr. Carruthers et ses collègues dans leur récent travail et par le Dr. Molander il y a de nombreuses années. La Recommandation 5 est adoptée.

7) Communications.

Dr. Føyn: "Un Appareil pour mesurer la Densité de l'Eau de Mer".

Mr. Postma: "Mouvements de l'Eau, Transport de Matières en Suspension et Phosphore dans le Wadden See Hollandais."

Mr. Lee: "La Relation entre quelques Enregistrements au Sondeur à Echo et des Observations au Bathythermographe en Mer de Barentz."

Dr. Cooper: "Mouvements de l'Eau sur le Plateau Continental et Relation avec l'Hydrographie des Pêcheries. I. Hydrographie."

8) Le Prof. Sverdrup est réelu Président.

II. Recommandations.

1) Le Comité Hydrographique recommande que le Sous-Comité Hydro-Biologique soit maintenu pour une nouvelle année.

2) Il est fortement souhaité que la campagne menée par trois nations pour l'observation des courants en Juin 1951 dans le sud de la Mer du Nord soit reprise à un moment intéressant les recherches sur les pêcheries, la prochaine époque de ponte de la plie en particulier.

Le Président de l'Institut Hydrographique Allemand est, par suite, sollicité de faire les démarches nécessaires dans son pays et les deux experts intéressés de Hollande et de Grande Bretagne, d'essayer d'obtenir comme précédemment la participation de leurs marines respectives.

3) Le Comité Hydrographique note avec satisfaction les progrès réalisés par de nombreux Comités de Secteur pour coordonner leurs programmes hydrographiques et il estime que le bénéfice commun peut être grandement augmenté par des arrangements de ce genre actuels ou à venir.

4) Cartes mensuelles des conditions de surface de la mer.

(a) Basé sur des témoignages reçus des biologistes quant à l'utilité des cartes mensuelles établies par le laboratoire de Lowestoft, le Comité Hydrographique recommande fortement la continuation de ces cartes.

(b) S'il n'est pas possible de continuer les cartes dans leur intégrité, il est néanmoins souhaité qu'un service des vents adéquat demeure en opération.

(c) Le Comité Hydrographique désire étendre ses remerciements au laboratoire de Lowestoft pour avoir entrepris la préparation et la publication de ces cartes jusqu'à ce jour.

5) Le Comité Hydrographique souhaite que l'Atlas Britannique: "Conditions de vent sur les mers autour de la Grande Bretagne: Flux d'air caractéristiques des mois du calendrier tels qu'ils ont été établis au cours du demi-siècle qui vient de se terminer" par A. L. Lawford et H. C. Parmenter, avec une introduction par J. N. Carruthers soit publié sans les délais demandés aux publications des séries du Conseil par suite de ses lourdes charges actuelles.

Sous-Comité pour l'Organisation de Recherches Combinées Hydro-Biologiques.

Président : Dr. Jens Eggvin.

I. Compte-rendu

1) Le Président rapporte le travail accompli au cours de l'année et se réfère aux rapports donnés au Comité des Mers Nordiques par le Professeur Braarud, le Dr. Tait et lui-même.

2) Coordination du travail ultérieur.

Le Dr. Täning propose une réunion restreinte des biologistes et hydrographes pour déterminer les sections indispensables pour la compréhension des conditions hydrographiques du secteur.

Le Professeur SVERDRUP émet l'opinion que le Sous-Comité a sous sa dénomination actuelle terminé son travail et que de nouvelles recherches hydrobiologiques doivent être entreprises.

Après discussion, un Sous-Comité *ad hoc* comprenant MM. EGGVIN, BRAARUD, TÅNING et TAIT est constitué pour déterminer si le Sous-Comité Hydro-Biologique a accompli sa tâche et pour en faire le rapport au Comité Hydrographique.

3) Publications. Les Recommandations 1 et 2 sont adoptées.

4) Cartes mensuelles de température, salinité et vent de Lowestoft. Mr. GRAHAM donne quelques indications sur ces cartes et le Dr. CARRUTHERS fait quelques remarques sur une répétition de la campagne des mesures de courants dans le sud de la Mer du Nord. Ces deux questions demandant le conseil des biologistes, il est décidé de les traiter si possible à la Réunion Scientifique Spéciale.

5) Le Président ne désirant pas être réélu, le Dr. TAIT est élu Président si le Sous-Comité doit être prolongé.

II. Recommandations.

1) Le Sous-Comité approuve la recommandation du Comité des Mers Nordiques sur la publication du rapport du Professeur BRAARUD sur la distribution du phytoplancton.

2) Le Sous-Comité est d'avis qu'un rapport complet sur les recherches hydrographiques organisées par le Sous-Comité doit être publié par le Conseil. Des recommandations spéciales sur les publications seront faites quand les rapports auront été terminés.

Comité du Plancton.

Professeur T. BRAARUD préside.

I. Compte-rendu.

Le Président, le Dr. P. JESPERSEN, ne peut assister à la réunion. En raison de sa nomination au poste de Secrétaire Général du Conseil, un nouveau Président doit être élu. Le Professeur T. BRAARUD est proposé et prend la présidence.

Une communication du Professeur E. STEEMAN NIELSEN: "Investigations sur la Production de Matière Organique au cours de l'Expédition de la 'Galathea'" est lue par Mr. WIMPENNY.

Mr. R. S. WIMPENNY fait un exposé sur les "Variations de la Teneur en Graisse du Plancton pêché au filet au large de la Côte Anglaise de 1948 à 1951".

Mr. K. F. WIBORG fait un rapport sur les "Observations sur le Plancton de la Mer de Norvège et les Régions Voisines au cours des années 1948 à 1950".

Le Dr. C. E. LUCAS pose la question de savoir si une demande devrait être adressée au Laboratoire Océanographique à Leith pour la diffusion des résultats obtenus sur le plancton de la même manière que les cartes des conditions de température et de salinité en Mer du Nord et dans le secteur des Féroës-Shetland. Il est décidé d'en discuter au Sous-Comité pour les Recherches Combinées d'Hydro-Biologie.

Comité Statistique.

Président: Dr. NILS ROSÉN.

I. Compte-rendu

Le Président souhaite la bienvenue comme observateurs au Dr. W. R. MARTIN, Secrétaire de la nouvelle Commission Internationale pour les Pêches de l'Atlantique Nord-Ouest avec laquelle le Conseil coopérera, puis à MM. G. M. GERHARDSEN et W. H. SCHUSTER de la F.A.O.

Le *Bulletin Statistique* pour 1947 est présenté au Comité.

Le Président mentionne que le matériel pour le *Bulletin Statistique* 1948 a été reçu des pays membres, et qu'il est à l'impression et signale que les modèles à remplir pour 1949 et 1950 ont été envoyés aux pays membres.

A la suite d'une discussion concernant la coopération entre F.A.O., la nouvelle Commission Internationale pour les Pêches de l'Atlantique Nord-Ouest, et le Conseil, on exprime le voeu que ces organisations examinent toutes méthodes susceptibles de rendre comparables leurs statistiques.

Dr. NILS ROSÉN est réélu Président.

II. Recommandations.

Les pays membres sont invités à donner leurs chiffres de statistiques en poissons ronds frais, en même temps que les facteurs de conversion utilisés.

2ÈME PARTIE

RAPPORT ADMINISTRATIF

REPORT

of

ADMINISTRATION FOR THE YEAR ENDING OCTOBER 31st 1951

I. General.

DURING the year under review Poland has formally withdrawn as Member of the Council, otherwise no change has taken place.

The new scheme for the organization of Committee Meetings, accepted in 1950 in principle on the condition that Delegates should have an opportunity of making suggestions to the Chairman of the Consultative Committee before February 1st 1951, was brought into force at the Council Meeting in October 1951, with some small alterations suggested by Delegates.

Meetings of the Bureau attended by all Members and the Chairman of the Consultative Committee took place in May 1951 in Copenhagen, and in September and October 1951 in Amsterdam.

II. Work at the Central Office in Copenhagen.

On August 23rd 1951 the General Secretary, Dr. HARALD BLEGVAD, died suddenly. Dr. POUL JESPERSEN, Member of the Danish Commission for the Exploration of the Sea, was at once asked by the President to act as General Secretary pending the meeting of the Council. At the Bureau Meeting of 30. September 1951 his appointment was confirmed[1]).

The routine work has been carried out as usual in all departments.

[1]) Deceased 20, XII, 1951.

The following publications were issued, are in preparation

Rapp. et Proc.-Verb., Vols. No.	128 & 129	130
Annales Biologiques, Vol.	VI	VII
Journal du Conseil, Vol.	XVII, 1, 2 & 3	XVIII, 1
Zooplankton Identification Sheets, Nos.	18—29 and 30—40	
Bulletin Statistique, Vol.	XXXII, 1947	XXXIII, 1948
Bulletin Hydrograph.	For 1948	For 1949

Income and Expenditure Account for the year $^{1}/_{11}$ 1950—$^{31}/_{10}$ 1951.

EXPENDITURE

	D. kr.	D. kr.
I. Incidentals		
1. President	6,000.00	
2. Editor of the Journal	3,000.00	
3. Assistance to Editor of the Journal	1,500.00	
4. Chairman of Consultative Committee	200.30	
5. Chairmen and Vice-Chairman of Committees	32,000.00	
6. Editor for Statistics	2,000.00	
7. Editor of Plankton Sheets	1,000.00	
		45,700.30
II. Headquarter Staff		
1. General Secretary ($^{1}/_{11}$ 1950-$^{22}/_{8}$ 1951)	8,028.99	
General Secretary (October 1951)	865.33	
2. Editorial Assistance	3,000.00	
3. Assistant Secretary (General)	10,940.00	
4. Assistant Secretary (Information)	9,872.00	
5. Statistical Secretary	8,171.65	
6. Clerical Assistant	7,224.65	
7. Clerical Assistance	5,814.65	
		53,917.27
III. Hydrographical Staff		
1. Hydrographer	12,909.30	
2. Clerical Assistance	5,814.65	
3. Card Index	1,061.50	
		19,785.45
IV. Office Expenses		
1. Rent	5,580.00	
2. Light and Heating	1,142.49	
3. Stationery, books, etc.	3,563.32	
4. Telephone, telegrams, postage	1,987.25	
5. Insurance	516.96	
6. Upkeep	3,565.19	
7. Miscellaneous	2,306.57	
		18,661.78
V. Travelling Expenses		15,935.17
VI. Printing and Distribution		
1. Printing	51,939.09	
2. Translations etc.	599.70	
3. Distribution	1,575.24	
		54,114.03
VII. Pensions		4,746.29
VIII. Extraordinary Expenses (Mrs. Blegvad)		2,000.00
IX. Special Plankton Expenditure		6,354.93
X. Extraordinary Cost-of-living Expenditure		7,848.78
XI. Unexpended votes carried to Creditors		7,625.54
		236,689.54

RECEIPTS

	D. kr.	D. kr.
I. Contributions		
France	30,000.00	
Great Britain	30,000.00	
Belgium	15,000.00	
Denmark	15,000.00	
Finland	7,500.00	
Holland	15,000.00	
Iceland	15,000.00	
Ireland	15,000.00	
Norway	15,000.76	
Portugal	15,000.00	
Spain	14,985.00	
Sweden	15,000.00	
		202,485.76
II. Interests		
On Bank Deposits	288.96	
On Investments	5,898.26	
		6,187.22
III. Sale of Publications		13,492.85
IV. Sale of duplicate papers from Library		250.00
Excess of Expenditure over Income		14,273.71
		236,689.54

Pension-Fund.

EXPENDITURE	D. kr.	RECEIPTS	D. kr.
Miss Hansted's Pension as per Oct. 31st 1951	5,470.66	Balance as per November 1st 1950	108,854.82
Extraordinary cost-of-living bonus	504.00	Interests	4,559.88
Balance as per $^{31}/_{10}$ 1951	107,440.04		
	113,414.70		113,414.70

Balance Sheet October 31st 1951.

LIABILITIES	D. kr.	D. kr.	ASSETS	D. kr.	D. kr.
Capital Reserve:			Cash at Handelsbanken	3,402.88	
Balance as per November 1st 1950			Cash at Sparekassen	1,165.27	
Capital Account 37,134.90			Cash at Postgiro	58.53	
Special Suspense Account 50,485.00			Cash in hand	261.96	
	87,619.90				4,888.64
Less Excess of Expenditure over Income	14,273.71		Danish Treasury Bonds (nominal value 95,000.00) at cost		104,444.61
		73,346.19	(Market value on Oct. 31st 1951: Kr. 77,830.00)		
Pension Fund		107,440.04	Pension Fund:		
			Cash at bankers	1,247.63	
Creditors:			Danish Treasury Bonds (nominal value 108,500) at cost	106,192.41	
Contributions prepaid	21,932.67		(Market value on Oct. 31st 1951: Kr. 86,430.75)		107,440.04
Publications prepaid	4,000.00				
Contribution from Woods Hole Oceanographic Institute for work in Bull. Hydr.	500.00				
Unexpended Vote from 1950/51.	7,625.54				
Sundry Creditors	2,126.95	36,185.16	Sundry Debtors		198.10
		216.971.39			216,971.39

E. Brønniche

I have compared the above Balance Sheet with the Books and Vouchers of the Council, and certify that it is in accordance therewith. I have verified the existence of the cash on hand and at bankers as well as of the Treasury Bonds.

Copenhagen, February 23rd 1952.

(sign.) Karl Sørensen,
State-Certified Auditor.

Reports of Area Committees.

NORTH-EASTERN AREA COMMITTEE

1950

By

GUNNAR ROLLEFSEN

England.

(G. C. TROUT.)

NINE cruises were made by the "Ernest Holt" to the Bear Island area in order to continue studies initiated in 1949.

The two hydrographic sections were worked in March, June, and October when routine temperature observations and salinity, oxygen and plankton samples were collected, the latter being duplicated to cover both normal counts and fat determinations.

Trawl and bottom temperature surveys were carried out on eight cruises for the study of fish and temperature relationship whilst stramin and Agassiz hauls were made incidental to the main work of the cruises.

Otolith work on cod races and migrations within the trawl fishery progressed, and sampling of the younger age-groups was begun to investigate the growth of the otolith in its first year.

Small scale collections of material for D.S.I.R., Aberdeen, were undertaken as in the previous year.

Norway.

(G. ROLLEFSEN.)

The new Norwegian research ship "G. O. Sars" started its work in January 1950, and during the year it undertook four cruises to Lofoten, the Barents Sea and the Norwegian Sea. Hydrographical sections and fishing experiments with trawl, drift-nets and purse-seine were carried out. The asdic equipment was used for localization of herring shoals.

"Johan Hjort" made eight cruises along the Norwegian coast and to the Norwegian Sea, during which tagging of cod and herring, investigations of plankton, fish larvae and young fish in connection with hydrographical work were carried out.

Eight hired vessels undertook a number of cruises of shorter duration in coastal and distant waters with the object of collecting observations on hydrographical conditions, the occurrence of plankton, and to effect taggings.

Hydrography.

See Hydrographical Committee.

Plankton.

The sampling of plankton from the fixed stations was continued. Distribution and stage of development of pelagic fish eggs and larvae were investigated, and the studies of the diet of young fish fry were also continued.

Fish.

Cod. The collection of material for estimating the mortality and the fluctuations in the cod stock have been expanded. Approximately 50,000 length measurements and about 15,000 age-determinations have been registered.

Tagging experiments in the Lofoten area have been continued, and will form a permanent item on the research programme.

Haddock. The investigations of age and growth of haddock were continued.

Mackerel. Tagging experiments have been started in connection with age and growth studies.

Herring. Collection of herring samples for studies on age, growth, and fluctuations of the stock has been continued.

For details see Herring Committee.

Other work.

The rearing of normal and hybrid larvae of flatfishes was undertaken.

Scotland.

(B. B. Parrish.)

Scottish research vessels undertook hydrographical and plankton sampling in the southern region of the area in May and June, 1950. In May "Explorer" took hydrographic observations and one-metre tow-net plankton samples for evidence of haddock egg and/or larval drift over the Norwegian Deeps in the Bergen-Sognefjord area, and in June similar samples were taken by "Scotia" in the southern part of these waters between Stavanger and Lindesnes.

Material and observations collected on these occasions, and between the 200 and 1000-metre contours in the Faroe-Shetland Channel, are reviewed in the reports for the Northern North Sea and the North-Western Area respectively.

NORTH-WESTERN AREA COMMITTEE

1950

By

Å. Vedel Tåning

The following countries had research vessels operating in the area during 1950:

Denmark: "Dana", "Adolf Jensen",
Iceland: "Maria Julia",
Norway: "G. O. Sars",
Scotland: "Scotia", "Explorer", and
Sweden: " Skagerak".

In addition, observations were collected by several chartered vessels, fishery inspection vessels etc., viz.: Denmark, "Heimdal"; England, the weather ship "I" on 60° N. Lat. 20° W. Long.; France, "Ailette", "Aventure"; Iceland, "Ægir", "Fanney" and the route vessels "Esja", "Hekla" and "Tröllafoss"; Norway, the chartered motor vessel "Eldöy". Ireland and Holland had no vessels operating in the area during the year 1950. Observations and reports on the results are published in the *Bulletin Hydrographique*, *Annales Biologiques* and national publications.

Denmark.

(Å. Vedel Tåning.)

Faroes.

The research vessel "Dana" operated in the Faroe waters from 1. June to 24. June and again from about 1. August to 17. August.

The international section from N. Unst to Nolsø was carried out in June and in August.

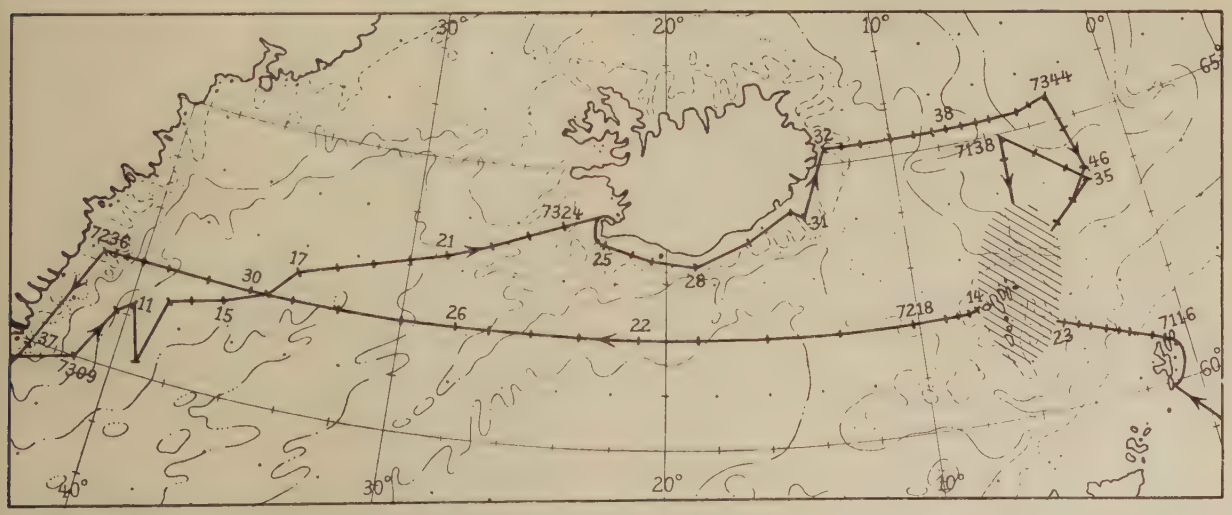

Figure 1. Route of the R/V "Dana", 1950. In the hatched area (Faroe) several sections. See also Figure 2.

The abundance of fish larvae (cod and haddock especially) was investigated around the Faroes, and the eel-hand-seine was used in the fjords to catch cod and coalfish bottom stages. Some trawl stations were also operated. The general survey of the occurrence of herring in the waters between Faroe and east Iceland was carried out according to the international programme, comprising hydrography, plankton research, echo-sounding, drift netting and drift-bottle releases. The hydrographic sections are given in Ann. Biol. VII. A quantity of measurements and otoliths of cod was collected from Faroe fishing vessels operating on the fishing banks round the islands.

North Atlantic Ocean and the Denmark Strait.

The hydrographical section from Myggenæs on the Faroes to Tingmiarmiut on the East Greenland coast was operated by the "Dana" late in June (see Fig. 1 and Ann. Biol. VII).

Icelandic Waters.

A series of pelagic stations along the south coast was operated by the "Dana" late in July; 2-metre stramin nets were used between Reykjanes and east Iceland in an investigation into the abundance of fry of the summer spawning herring (see Ann. Biol. VII).

West Greenland Waters (Paul M. Hansen).

As in previous years the M/K "Adolf Jensen" carried out research work during the winter 1949—50 especially in Godthåb fjord. In this area the work was continued until 16. May. In the last part of May investigations were carried out on the offshore banks, Fylla Bank, Lille Hellefiske Bank and Store Hellefiske Bank. During the periods 5. to 19. June and 12. to 26. July trawling experiments and a variety of other work were carried out in Disko Bay. In August most work was carried out in the Sukkertoppen district. Much time was wasted on account of the engine of M/K "Adolf Jensen" having to be repaired.

Cod. Hauls with a 1-m. stramin net have been made in spring in different fjords and on the offshore banks in order to sample cod eggs and fry. Small cod were caught with the eel-hand-seine and samples of some hundreds of otoliths together with length measurements were taken for age-assessment. At different fisheries stations and aboard M/K "Adolf Jensen" a total of about 10,000 cod otolith samples were collected from commercial catches for age-determinations. A total of 554 cod were marked with ebonite discs in Holsteinsborg and Sukkertoppen districts and 80 small cod were marked with Lea marks in Christianshåb district.

Prawns (*Pandalus borealis*). Trawling experiments were carried out in Godthåb fjord and in Disko Bay. Research work in order to find trawling grounds for Pandalus in Sukkertoppen district was carried out without results. All fish caught with the prawn trawl were measured.

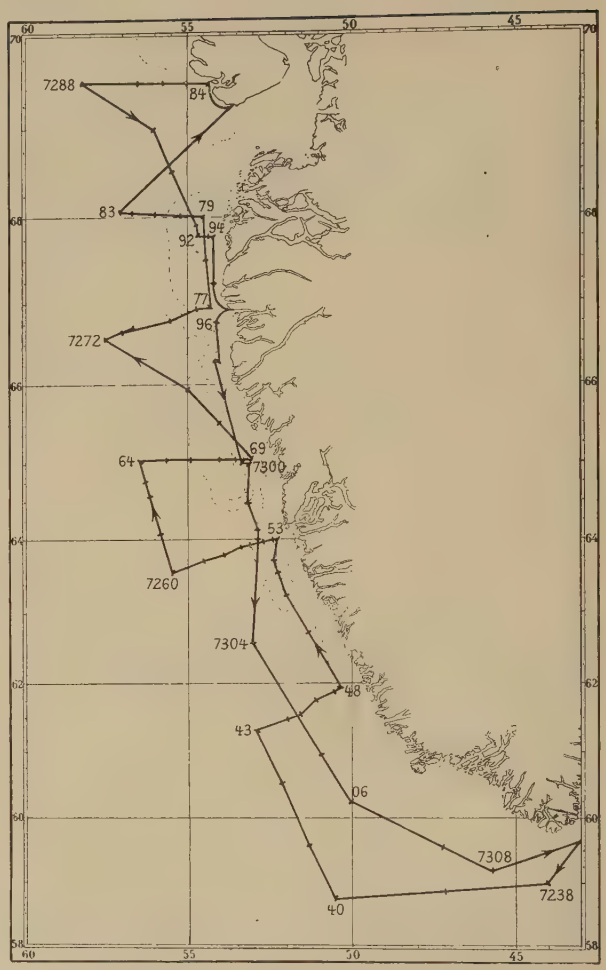

Figure 2. Route of the R/V "Dana" in the West Greenland waters, 1950.

Hydrographic observations were taken in all areas where biological investigations were made.

The "Dana" worked in the eastern part of the open Davis Strait from late June to late July. A total of about 70 stations, mainly on 6 sections, were operated from Cape Farewell to the southern part of Baffin Bay off Disko Island (see Fig. 2). On about 50 stations 2-m. stramin nets were used for the study of fish fry distribution. The results obtained as to distribution and abundance of cod, halibut, Greenland halibut and redfish are given in Ann. Biol. VII, where also the hydrographical results (including some sections from the naval vessel "Heimdal") will be found. About 500 big cod were marked on the offshore banks.

Plankton investigations were carried out from the "Dana" during the cruises in the North Atlantic and the Davis Strait.

England.

(M. Graham.)

Fine international net hauls from 50 m. to the surface were taken from Ocean Weather Ship position ITEM (60° N. 20° W., until 25. March 1950 and then 59° N. 19° W.). It was intended to take samples weekly but bad weather and other causes reduced the number taken to 33.

France.

(P. Desbrosses.)

The naval fishery inspection vessel "Ailette" operated 4 hydrobiological stations south-west of Iceland during August, between 63°18′ N. Lat., 21°39′ W. Long. and 63°42′ N. Lat., 24°55′ W. Long. 20 observations of temperature and water samples between surface and 200 m. depth were secured; surface plankton samples were also obtained.

The naval frigate "Aventure" carried out work at Newfoundland between 12. April and 31. May, between 9. July and 4. August and in September. During August the "Aventure" operated a hydrographical section from Newfoundland to west of Cape Farewell and continued the section off the west coast of Greenland between 58° N. Lat. and 69° N. Lat. A total of 60 stations were operated and more than 300 observations of temperatures and water samples between surface and 470 m. depth were secured.

Iceland.

(Árni Friðriksson.)

Work at Sea. At the end of March and in the beginning of April the patrol boat M/S "Ægir" was chartered for hydrographical work on Selvogsbanki and in the Faxa Bay region and for collecting bottom samples off the SW. coast in a search for herring spawn. Later on in April M/S "Fanney" collected bottom samples in the Faxa Bay area in order to find the northern limit for the spring spawning of herring. A few weeks later the new research vessel M/S "Maria Julia" was ready and placed at our disposal. Two cruises were made.

During the first cruise which lasted from 16. May to 7. June, plankton was sampled around the Westmanna Isles and on Selvogsbanki by means of stramin and Hensen nets, and hydrographical observations were made. Similar investigations were carried out in Faxa Bay and a section west of Látrabjarg was operated, but the regular section off Kögur had to be abandoned owing to bad ice conditions. The ice border north of Húna Bay was met with well south of 67° N. Lat. The investigations were continued from Siglufjord to 68°10′ N. Lat., from there to 68°30′ N. Lat. north of Melrakkaslétta and then again to the coast. Observations were made along the NE. corner of the country, then along the E. coast. The current border off SE. Iceland was located and the trip continued along the S. and SW. coasts to Reykjavik.

During the second cruise, from 27. July to 1. September, the same stations as in the first cruise were operated off the west and north coasts and a number of new stations were added as the ice conditions were now more favourable. Trawling was carried out in different localities off the SW., NW., N. and E. coasts. Several hundreds of drift-bottles were liberated. During both cruises extensive observations on the quantity of phosphates were carried out.

Herring. See the report of the Herring Committee.

Cod. Investigations were continued as in previous years. The following numbers were measured (number of otoliths in brackets): Westmanna Isles (S.) 5777 (3791), Keflavik (Faxabay) 5290 (1398), Akranes (Faxabay) 4629 (1426), Grundarfjord (Breida bay) 2352 (918), Isafjord (N.W.) (302), Húsavik (N.) 7660 (3175) and onboard "Maria Julia" (1214). The total number of cod measured was 27,224 and 12,224 otoliths were taken. The working up of the material which had been collected during the war years was continued, and older material was checked. It is hoped that this work will be finished during this year. The total material covers a continuous period of 25 years (1925—1950) and also includes some samples collected in the first quarter of the century. 1117 cod were tagged in 8 different localities off the W., N. and E. coasts.

Other Species of Fish. About 1200 redfish were measured, weighed and examined as to sex and sexual maturity at Akranes in November. A considerable amount of saithe was caught by means of purse-seine, and processed for oil and meal in the reduction plants on the N. coast during the summer. 1668 specimens of these fish were measured and the ages of 200 determined by means of the otoliths. All the catches consisted almost entirely of 5-year-old fish (97 %). The main food was found to be euphausids and 5—6 cm. long cod larvae. Halibut: about 800 large halibuts were measured and their otoliths collected for age-determination during early summer in Akranes. The fish, of length 100 cm. and more, had been caught on long-lines in the Denmark Strait. Plaice: 50 fish were tagged in Adalvik (N.W.) at the end of July.

Whales. Reports from the whaling stations in Hvalfjord (Faxabay) were collected as usual. All available information on individual whales caught by Norwegians in Icelandic waters during the period 1889—1915 has now been indexed (Paramount cards). This statistical material which covers between 5000 and 6000 animals, is now being worked up.

Hydrography. The extent of collecting samples was mentioned under "work at sea". All the material, which was collected earlier, has now been worked up. Surface thermographs are now used in four Icelandic vessels: M/S "Maria Julia", M/S "Esja", which is on route on the coast, M/S "Hekla", on the same routes as M/S "Esja" during winter, but between Reykjavik and Glasgow during the summer months, and M/S "Tröllafoss", on route between Reykjavik and U.S.A. and Canada. The temperature data from the thermo-

graphs have been worked up as soon as they come to hand.

Plankton. Collections were made, as mentioned under "work at sea", with special regard to the distribution and density of fish larvae, and older material was worked out.

More than 300 bottom samples were collected by means of the Petersen 0.2 sq.m. bottom grab in March-April off the western part of the S. coast and in the Faxa Bay area. The principal aim of the sampling was to locate herring spawn.

Norway.

(Birger Rasmussen.)

Special investigations on the stock of **cod** on the banks off West Greenland were carried out in the early part of August 1950. Three hydrographic sections were worked off the west coast of Greenland, viz., one section across Lille Hellefiske Bank, one across Danas Bank and one across Fyllas Bank.—The investigations were carried out on the Norwegian fishing vessel "Eldøy" which was leased for a short period from her ordinary fishing.

In the Davis Strait about 300 cod were marked and liberated, using Lea's hydrostatic tags. In charge of these investigations was Birger Rasmussen.

In the North-Western Area work on **herring** was carried out by Finn Devold and Olav Aasen. A review of this work is given under the Herring Committee. The plankton has been treated by Kr. Fr. Wiborg in the Plankton Committee.

Scotland.

(B. B. Rae.)

During 1950 eight cruises were carried out by Scottish research vessels in the North-Western Area. The dates and general nature of the work done are as follows:—

Hydrobiological Surveys. 1. "Scotia"—7. to 13. March—hydrobiological survey from Butt of Lewis to Faroe Bank and Faroe. 2. "Scotia"—1. to 19. April—trawling and hydrobiological survey of fishing grounds round the Faroes. 3. "Scotia"—12. May to 2. June—hydrobiological survey from Butt of Lewis to Faroe Bank and Faroe, thence to Flugga in North Shetland: trawling on Faroe Bank and at Faroe. 4. "Scotia"—16.to 28. June—hydrobiological survey from Butt of Lewis to Faroe Bank and Faroe, thence to Flugga: trawling on Faroe Bank and at Faroe. 5. "Explorer"—20. July to 4. August—hydrobiological survey from Butt of Lewis to Faroe Bank and Faroe, thence to Flugga: trawling on Faroe Bank and at Faroe. 6. "Scotia"—4. to 23. September—hydrobiological survey from Butt of Lewis to south Faroe, thence to Iceland, Westmann Isles and Faxa Bay, returning from Ingolfshöfdi Huk to the Sound of Harris via Lousy Bank and Rosemary Bank: trawling at south Faroe along south coast of Iceland and in Faxa Bay. 7. "Scotia"—7. to 14. October—hydrobiological survey from north coast of Scotland to Suderö; trawling at Faroe. 8. "Scotia"—4. to 7. November—hydrobiological survey from Butt of Lewis to Faroe Bank and Faroe, thence to Flugga.

In addition to the recording of temperatures and collection of water samples for salinity determination, samples were also taken for oxygen and phosphate analyses at selected stations.

Plankton observations included the use of the Standard, the Hensen and 2-metre silk vertical nets, as well as the 1-metre silk for oblique hauls from the bottom to the surface. In part this survey was planned with a view to studying the distribution of haddock larvae on Faroese grounds in relation to the concentration of adult fish as determined by the use of the trawl.

Throughout the year the "Scotia" used a small 30-foot trawl and the "Explorer" a standard 48-foot net as employed by Aberdeen trawlers. With the extension of the time available for trawling a wider area was more frequently surveyed by this method than hitherto, thus giving a far more detailed picture of the fish population at Faroe. Besides the routine treatment of all fish caught a beginning was made with a programme of haddock tagging.

Extensive sampling of **haddock** catches by Aberdeen trawlers fishing at Faroe was carried out on the Aberdeen fish market. Sampling was also continued of the **halibut** catches landed by long liners working to the west of Iceland. Mr. McIntyre, of the scientific staff, made one trip on a local motor liner to the west Icelandic grounds to collect halibut data.

The results of these investigations are reviewed in *Annales Biologiques VII.*

Sweden.

(A. Molander.)

Fishing experiments (line fishery) and investigations on ling off the west coast of the Shetland Islands were carried out during July.

COMITÉ ATLANTIQUE

1950

Par

JEAN LE GALL

Ce rapport administratif du Comité Atlantique pour l'année 1950 ne fera état que des travaux effectués au large de la plateforme continentale de l'Atlantique nord-est, en référant, le cas échéant, aux rapports administratifs particuliers de ses Sous-Comités, puis des recherches de biologie entreprises en commun dans ces trois Sous-Comités, le rôle du Comité Atlantique étant, précisément, de les coordonner.

I. Hydrologie.

Belgique.
Danemark.
Pays-Bas.
Portugal.

Pas de résultats communiqués.

Ecosse.

En Mars 1950, le navire de recherches écossais "Explorer" a effectué une série de stations le long du 56°50′ N., depuis Barra Head, au sud des Hébrides, jusqu'au 9°50′ W. Gr. Cette série d'observations a été reprise en Août 1950.

Les observations hydrologiques ont été complétées par des pêches de plancton et des traits de chalut. Diverses observations ont été faites dans des stations côtières.

Angleterre.

En Janvier et Février, des sections hydrologiques (température et salinité) ont été faites entre Newhaven et le Détroit de Douvres, en liaison avec les recherches sur la sardine citée plus loin.

France.

Observations régulières à bord des frégates météorologiques "Laplace" et "Mermoz" au point "K" (45° N.—16° W.Gr.) et sur les trajets aller et retour de Brest à ce point. (Observations températures, salinités, plancton).

L'aviso "Aventure" de la Marine Nationale, a procédé à ses observations habituelles (températures, salinités, plancton) à Terre-Neuve et au Groënland.

Le navire océanographique "Président Théodore Tissier" a effectué, au cours du 1er semestre 1950, une longue croisière consacrée à la recherche et à l'étude des concentrations de thonidés dans l'Atlantique.

Au cours de cette campagne: 537 stations hydrologiques avec 1,800 prises de températures et d'échantillons d'eau ont été effectuées sur les trajets: Brest—Madère 20° N.—40° W. Gr., Azores—Madère, Canaries, Açores et au large de la côte occidentale d'Afrique.

Le navire a ensuite poursuivi sa campagne en Méditerranée.

II. Plancton.

Ecosse.

Au cours des stations hydrologiques faites en Mars et en Août 1950, le long du 56°50′ N., des pêches de plancton horizontales, verticales et obliques, ont été faites au filet fin Standard (soie) et au filet Hensen, ainsi qu'au filet de soie à grandes mailles d'un mètre de diamètre.

France.

Plus de 600 pêches de plancton en surface et en profondeur ont été faites par le "Président Théodore Tissier" au cours de sa campagne d'étude des Thonidés dans l'Atlantique Nord. L'abondant matériel recueilli a été distribué aux spécialistes pour étude et d'intéressants rapports sur la distribution de diverses espèces de copépodes (Melle J. FLEURY) et sur la répartition des Diatomées (Melle M. FORTIN) ont été présentés au Conseil.

III. Bathymétrie et Sédiments.

France.

Au cours de sa campagne de 1950, le "Président Théodore Tissier" a procédé à des sondages ultrasoniques sur les hauts fonds au large du Plateau Continental Atlantique.

IV. Biologie.

A. Clupéidés.

Harengs.

Voir le Comité du Hareng, p. 31.

Sprats.

France. Continuation des observations habituelles.

Irlande. La corrélation taille-poids, la croissance du sprat, la maturité sexuelle et la teneur en graisse, ont été étudiés sur les pêcheries de sprats les plus importantes en Irlande (Youghal, Cork, Kinsale et région du Donegal).

Sardines et autres Clupéidés.

Grande-Bretagne. Des recherches sur la sardine ont été entreprises pour voir si la pêche de ce poisson, actuellement limitée à l'entrée occidentale de la Manche, ne pourrait pas être étendue en Manche orientale pendant la période d'Octobre à Mars.

Cinq croisières ont été faites par R.V. "Sir Lancelot" en Mars, Avril, Mai, Juin, Juillet 1950 pour étudier la distribution des œufs et détecter les bancs de sardines.

Il a été possible d'établir une carte de la distribution générale de ces bancs pendant l'été et de montrer que cette distribution était très étendue.

En Mai, Juin, Juillet, le "Sir Lancelot" a été assisté par le R.V. "Onaway". Les concentrations découvertes par sondages ultrasoniques ou révélées par la présence d'œufs ont été exploitées par une flottille disposant de filets dérivants à mailles de taille variée.

De bonnes pêches ont été réalisées entre Boulogne et Gris-Nez dans la Baie de Rye et au large de Newhaven.

Espagne (Méditerranée). Observations sur les sardines, sardinelles et anchois de Málaga, des Baléares et de la Mer d'Alboran.

Une importante étude de M. Andreu sur l'histo-anatomie de l'ovaire de la sardine est en cours de publication.

Maroc. L'étude biologique de la sardine et de l'anchois (biométrie, scalimétrie, zones et saisons de ponte, nourriture) a été continuée.

Tunisie. Le navire seineur yougoslave "Narredac", venu sur l'invitation du Gouvernement pour des essais de pêche dans le Golfe de Gabès, en Méditerranée, a constaté l'abondance de sardinelles (*Sardinella aurita*) dans cette région.

B. Scombridés.

France. Observations continuées sur la biométrie du maquereau en Mer Celtique et dans le Golfe de Gascogne.

C. Thonidés.

Espagne. Divers travaux de MM. Lozano et Navaz sur les diverses espèces de Thonidés des côtes d'Espagne ont été publiés en 1950.

M. Bellón a étudié les contenus stomacaux du thon rouge.

France. Au cours de sa campagne de 1950 en Atlantique et en Méditerranée consacrée à l'étude des Thonidés, les observations faites sur le thon rouge (*Thunnus thynnus*), le thon aux nageoires jaunes (*Neothunnus macropterus*), le thon obèse (*Parathunnus obesus*), la bonite à ventre rayé (*Katsuwonus pelamis*) et le germon (*Germo alalunga*) ont montré que la pêche de ces Thonidés pouvait être faite, à longueur d'année, à une distance inférieure à 1,500 milles des ports d'armement.

Quelques larves et post-larves de Thonidés, à différents stages, ont été recueillies dans les pêches de plancton faites au sud de Madère et des Açores. Leur détermination délicate, étant donnée l'absence d'une description précise sur le développement de l'œuf et des premiers stades larvaires des Thonidés, a été confiée à des spécialistes.

Des mensurations de germons faites sur les lieux de pêche ou dans les ports de débarquement ont porté sur plus de 16,000 individus. (Voir Ann. Biol. VII.)

Les recherches ichthyométriques sur la bonite à ventre rayé et le thon rouge ont été continuées.

Maroc et A.O.F. Continuation des recherches sur la biologie des Thonidés africains (thon rouge, germon, albacore, thon obèse, listao, bonite, melva, bacorète et palomète).

Tunisie. L'écaille d'un germon capturé en Mer Tyrrhénienne par le "Président Théodore Tissier" a fourni quelques données nouvelles sur la biologie de *Germo alalunga*.

Les opérations du navire de recherches yougoslave "Narredac" ont confirmé les observations de la croisière du "President Théodore Tissier" en 1949 sur la richesse en thons et en thonines du Golfe de Gabès et prouvé la possibilité de leur pêche industrielle au filet tournant.

D. Gadidés.

Morue.

France. L'étude de l'influence des conditions hydrologiques sur la répartition des concentrations de morues sur les bancs de Terre-Neuve est poursuivie par l'Office Scientifique et Technique des Pêches Maritimes, en liaison avec la Marine Nationale et l'Armement à la Grande Pêche.

Merlu.

France. Les recherches faites sur cette espèce ont été exposées dans les rapports particuliers des Sous-Comités. Les résultats obtenus dans chacun de ces Comités seront examinés et discutés au Comité Atlantique.

E. Mollusques.

Coquille Saint-Jacques *(Pecten maximus)*.

France. Les recherches entreprises depuis 1946 sur la coquille St-Jacques et, en particulier, sur les bancs importants de la rade de Brest, ont été régulièrement poursuivies.

Il apparait que ces bancs constituent une population autochtone évaluée à plus de 45 millions d'individus dont la croissance est limitée et ne dépasse qu'exceptionnellement 12 cm. Leur première maturité sexuelle se manifeste quand leur taille atteint 8.5 cm. à l'âge de deux ans révolus.

Irlande. Les pêcheries importantes de *Pecten maximus* de la Baie de Bantry et de la région de Connemara ont été étudiées et les prélèvements examinés au point de vue taille, croissance, poids des chairs et développement sexuel pendant la période d'Octobre à Mai.

Sous-Comité du Plateau Continental Européen.

1950

Par F. Navarro

I. Travaux à la Mer.
Hydrologie.

Espagne.

Le navire océanographique "Xauen" a effectué en Juillet, Août et Septembre une campagne dans l'ouest de Galice entre les latitudes 41°45′ et 43°15′ N. Sur 15 alignements EW. de la côte jusqu'à 600 m. de profondeur plus de 900 opérations ont été faites, comportant simultanément des sondages, prélèvements de sédiments, relevés de température, salinités, phosphates et oxygène. Sur trois stations à l'ancre, les observations ont été continuées pendant 28 heures.

En plus de l'hydrologie, une centaine de pêche de plancton et plusieurs pêches au chalut ont été pratiquées.

De Málaga à Vigo, le "Xauen" a effectué des stations hydrologiques dans la Mer d'Espagne et au large du Portugal.

M. Lopez-Costa (laboratoire de Vigo) a mis au point une nouvelle méthode colorimétrique pour le dosage des nitrates dissous dans l'eau de mer. Les premiers résultats sont sous presse.

Une étude de M. G. de Llarena sur les sédiments de Galice (croisière du "Xauen" en 1949) est en cours d'impression, ainsi qu'une autre de M. F. Del Riego concernant le contenu de CO_2 des sédiments de la ria de Vigo et la saturation des eaux en CO_3Ca dissous. M. Arévale a entrepris le dosage de H_2S dans les vases de cette ria.

D'importants aménagements ont été faits sur le garde-côte "Arcila". Il commencera ses travaux océanographiques en automne 1951.

France.

Les observations hydrologiques et les pêches planctoniques habituelles ont été poursuivies en Manche occidentale, en Mer Celtique, dans le Golfe de Gascogne et au large de la Péninsule Ibérique:

— à bord de l'aviso "Ailette" qui, en Mars, a fait une section hydrologique à la latitude du 47°13′N. et en Avril a travaillé en Mer d'Irlande;

— à bord des frégates météorologiques "Laplace" et "Mermoz" au point K (voir Comité Atlantique);

— à bord des navires de pêches opérant en Manche; et dans le Golfe de Gascogne sur les fonds chalutables et sur les pêcheries de sardines et du thons.

Plusieurs essais de pêches aux thons ont été pratiqués: au feu et puis à la senne tournante.

Enfin, le navire océanographique "Président Théodore Tissier" a effectué en Janvier et en Juillet des sections hydrologiques en Manche et dans le Golfe de Gascogne et à l'ouest de la Péninsule Ibérique.

Grande-Bretagne.

Au cours de Janvier et Février ont été faites des sections hydrologiques (salinités et températures) entre Newhaven et le Détroit de Dover, complément des recherches sur la sardine.

Irlande.

Relevé de températures de surface à bord du bateau-feu "Conigsbeg".

II. Biologie.

A. Clupéidés.

(Voir Comité Atlantique.)

B. Gadidés.

Merlu.

En **Belgique,** un projet d'étude du merlu a été établi, comportant la mensuration chaque semaine de 300 à 400 kg. du poisson dans la minque d'Ostende. Depuis Octobre 1950, il n'y a pas eu de merlu provenant du Plateau Atlantique. Au cours de 1951, il sera probablement possible de faire des observations sur du poisson provenant de cette zone.

C. Poissons divers.

France. Une mise au point de nos connaissances sur le squale Pélerin (*Cetorhinus maximus* Gunn.) sous les signatures de MM. le Gall, Desbrosses et Chenard est en cours d'impression.

Crustacés et Mollusques.

France. Quinze-cents exemplaires de crevettes roses (*Palaemon serratus* Fabr.) ont été examinés sur les côtes de Vendée du mois de Mars au mois de Mai du point de vue de la répartition des tailles, de la première

maturité sexuelle, de la répartition des femelles œuvées et des femelles ayant libéré leurs œufs. Cette étude sera poursuivie en 1951.

Un millier de coquilles St-Jacques (*Pecten maximus* L.) de pétoncles (*Chlamys varia* L.) et de vanneaux (*Chlamys operculis* L.) ont été étudiés en rade de Brest, à la suite de dragages effectués par le "Président Théodore Tissier" en Janvier et en Juillet. Cette étude confirme les observations antérieures de M. LE GALL.

Les recherches sur le taret (*Teredo* sp.) sur l'attaque par ce mollusque des bois immergés, et sur les procédés chimiques pour réduire cette attaque. ont été continuées à La Rochelle.

Algues.

France. Les études chimiques sur les algues atlantiques ont été poursuivies en Espagne; deux notes sont en cours de publication.

Sous-Comité de la Méditerranée Occidentale.

1950

Par H. HELDT

I. Travaux à la Mer.

Algérie.

Les escorteurs de la Marine "Sabre" et "Cimeterre", le navire de l'Office "Président Théodore Tissier" et le côtre de la Station Biologique d'Alger "Crisia" ont effectué 510 prélèvements d'échantillons d'eau à des profondeurs s'étageant entre 0 et 2,000 m.

Le Dr. BERNARD a fait 64 mesures d'éclairement sous-marin de 50 m. à la surface par cellules au sélénium, au large du Cap Matifou.

Les analyses et examens d'échantillons ont été pratiqués à la Station d'Alger (salinité totale — teneur en phosphates et nitrates) et les éléments fournis par les stations sur les radiales de Nemours, Oran, Tenes, Alger, Bougie, Philippe-ville, Bone et La Calle ont permis l'étude du courant atlantique en Méditerranée occidentale.

France.

Le navire océanographique "Président Théodore Tissier" a travaillé en Méditerranée occidentale de la mi-Juin à la mi-Juillet, prospectant les lieux de pêche du thon rouge et du germon, sur les côtes de Tunisie, de Sicile, d'Italie, région de Naples et de Sardaigne; effectuant des sections hydrologiques, avec pêches planctoniques, pêches au feu et pêches au germon aux lignes traînantes et pratiquant plus de 40 dragages dans la région d'Alger pour y préciser l'étendue de la zone chalutable.

Au laboratoire Arago de Banyuls et à la station maritime d'Endoume, les études hydrologiques se sont poursuivies.

Le Comité de Recherches et d'Etudes Océanographiques a procédé à Antibes, à des études de courant par lancement de bouteilles dérivantes.

Monaco.

Les mesures habituelles de température et de salinité dans la région de Monaco se sont poursuivies.

D'une série d'observations méthodiques faites antérieurement à 3 stations fixes, J. ROUCH a calculé les densités *in situ* et en a déduit les courants.

Tunisie.

Des observations hydrologiques (températures — salinités — mesures de courants . . .) ont été faites par la station Océanographique de Salammbô à bord des chalutiers d'Etat et des vedettes de la surveillance des pêches.

Les escorteurs de la Marine ont effectué en Mars et Juin des sorties au cours desquelles 688 échantillons d'eau et 20 de plancton ont été prélevés qui ont été analysés à la Station Océanographique de Salammbô.

Ils ont en outre sondé à l'U-S, sur près de 700 milles, les routes parcourues pour l'exécution des stations ou spécialement établies pour la détermination des isobathes.

L'étude des courants, aux différents niveaux par le calcul des densités, a été entrepris dans le Canal de Sicile en vue de déterminer les échanges d'eau entre les deux bassins de la Méditerranée.

Une mission hydrographique a effectué la revision des cartes de Tunisie pour les sondes côtières jusqu'aux fonds de 12 mètres et une série d'études: marées et courants, houle, rides de sable et des mesures magnétiques.

II. Plancton.

Algérie.

238 pêches ont été effectuées sur les côtes algériennes dont 128 par le Dr. BERNARD au filet fermant. Le plancton microscopique (algues et protozoaires) a été dénombré au microscope inversé par sédimentation sur fond mince et le plancton animal (filets fermants) compté et mesuré. Des résultats, le Dr. BERNARD a tiré d'intéressantes conclusions sur la fertilité des eaux de Méditerranée.

Tunisie.

Les échantillons de plancton pêchés en cours d'année ont été déterminés à la station de Salammbô.

III. Sédiments Marins.

Algérie.

M. Termier a analysé les vases recueillies par le navire "Président Théodore Tissier" sur les côtes algériennes et établi une comparaison avec les vases du Mazafran ou les sables de la plage de Sidi-Ferrich. Ces travaux pourront aider à la détermination du courant atlantique dont le trajet peut être dessiné par la sédimentation sur le fond méditerranéen.

Tunisie.

La mission hydrographique a étudiée les modifications des côtes et formations des hauts-fonds consécutifs à la construction des jetées, les dépôts d'alluvions des oueds, les barres de sables et leur déplacement ainsi que les formations de bancs en lunule provoqués par le courant et la houle.

IV. Biologie.

Clupéidés.
Thonidés. } Voir Comité Atlantique.

V. Mollusques et Crustacés comestibles.

Tunisie.

Des observations sur *Mytilicola intestinalis* parasite des moules ont été entreprises à la station océanographique de Salammbô.

VI. Eponges.

Tunisie.

Des essais de spongiculture par bouturage, suivant la technique japonaise, ont été tentés dans la région de Djerba. Les boutures, ainsi qu'il était établi par les expériences antérieures, ont cicatrisé les coupures et régénéré rapidement leurs tissus, mais les fils d'aluminium du modèle préconisé se sont montrés pratiquement inutilisables et n'ont pas résisté à l'eau de mer, plus de quelques mois.

De nouvelles tentatives viennent d'être reprises sous les directives et le contrôle de la station de Salammbô.

Sous-Comité du Plateau Continental Africain.

1950

Par Jean Furnestin

I. Hydrologie.

Espagne.

Au cours de sa campagne océanographique de Juillet à Septembre le "Xauen" a procédé à des observations hydrologiques dans la baie ibéro-marocaine.

Maroc.

Quatre campagnes océanographiques ont été effectuées par l'Institut des Pêches avec les avisos de la Marine Nationale, dans la zone du Plateau Continental Marocain et la région du détroit canarien, entre le Cap Spartel, le Cap Juby, le banc Conception et les îles Canaries.

Températures observées et échantillons d'eau de mer prélevés à 5, 10, 25, 50, 100, 200 et 400 m. le long de 17 radiales, à raison de 4 à 6 stations par radiale.

A.O.F.

Des relevés de températures ont été effectués dans la région du Cap Vert par le Service Technique des Pêches.

II. Bathymétrie et Sédiments.

Maroc.

L'étude du profil du Plateau Continental Marocain, par sondages ultra-sonores, a été poursuivie.

III. Plancton.

Espagne.

Des échantillons de plancton ont été récoltés sur les côtes du Rio de Oro.

Maroc.

296 échantillons de plancton de surface ont été prélevés entre Tanger et les îles Canaries au cours de 4 campagnes trimestrielles. L'étude du zooplancton est poursuivie au laboratoire de l'Institut des Pêches.

100 autres prélèvements ont été effectués sur les lieux de ponte de la sardine et de l'anchois dans les secteurs d'Agadir et de Casablanca.

IV. Biologie.

Clupéidés.
Thonidés. } Voir Comité Atlantique.

Gadidés.

France. Recherches sur le merlu des côtes du Maroc et du Rio de Oro étudié par R. Letaconnoux.

Maroc. Recherches sur la biologie du merlu (Cl. Maurin), des Sparidés (R. Coupe), des Mugilidés (M. Rossignol), des Carangidés (R. Gail), des Macruridés (Marie-Louise Faure).

L'Institut des Pêches a complété l'inventaire des espèces de la côte marocaine et entrepris un travail collectif sur la faune ichthyologique du Maroc.

Mollusques.

Etude d'un banc naturel de *Gryphea arcuata* découvert le long de la côte marocaine.

Algues.

La prospection des champs de laminaires (*L. flexicaulis, cloustoni, digitata* et *S. bulbosa*) est poursuivie. Une carte de la répartition de ces plantes marines est en cours d'établissement.

A.O.F. Les laboratoires de l'I.F.A.N. et du Service Technique des Pêches continuent à dresser l'inventaire de la faune d'Afrique occidentale.

V. Addendum.

Mauritanie.

Un laboratoire de biologie marine et des pêches a été créé à Port-Etienne, sous la direction de M. Rebecq.

Publications.

Espagne.

Anadón, E.: Sobre la sustitución alternativa en el litoral gallego de los llamados peces emigrantes (sardina, espadín, anchoa y jurel). Bol. Inst. Esp. Ocean., No. 24, 1950.

Bardan, Emma & P. Navarro: Nuevos datos sobre la Sardina de Málaga. ibid. No. 34, 1950.

Bellón, L.: Pesca y utilizacion del boqueron y de la sardina en las costas de Málaga. ibid., No. 30, 1950.

Lozano, F.: Notas sobre el Bonito del Norte o Albacora (*Germo alalunga* (Gml.)) de Galicia. ibid., No. 36, 1950.

Massuti, T. Valls & P. Navarro: Nuevas observaciones sobre la sardina y la alacha de Baleares. ibid., No. 35, 1950.

Massuti & P. Navarro: Tintinidos y Copepodos planctonicos dal Mar de Alboran. ibid., No. 37, 1950.

Navaz, J. M.: Contribución al estudio de los Escómbridos de la costa vasca (Atún, bonitos y melva). ibid., No. 31, 1950.

de Llarena G. & Colomb:

Navarro, F., de P., & F. Lozano: Carta de pesca de la costa del Sáhara, desde el Cabo Juby al Cabo Barbas. Trabajos, Inst. Esp. Oceanogr., No. 21, 1950.

France.

Travaux de l'Office des Pêches Maritimes.

Dizerbo, H. A.: Quelques aspects de la végétation des Algues marines supérieures du Massif Armoricain. Revue des Trav. de l'Off. des Pêches, Vol. XV, p. 43.

Lambert, L.: L'Ostréiculture en Amérique du Nord (Notes de mission). ibid., p. 123.

Ruckebusch, H.: Le Clam. Note sur *Venus mercenaria* L. Son introduction et son élevage dans le Bassin de la Seudre. ibid., p. 98.

Travaux du Laboratoire d'Endoume.

Bourdillon, A.: Note sur le commensalisme des Modoliaria et des Ascidies.

Devèze, L.: Contribution à l'étude des bactéries des eaux en relation avec les variations de milieu. Bull. Inst. Océan., No. 973. Monaco. 1950.

Picard, J.: Note sur les Hydraires Méditerranéens.

Travaux du Laboratoire de Banyuls.

Angelier, E.: Recherches sur la faune des sables littoraux méditerranéens.

Bougis, P.: Sur un allongement des nageoires pectorales corrélatif d'un changement de milieu chez les jeunes *Mullus*.

Buser, J.: Études des phénomènes de régénération chez quelques poissons téléostéens méditerranéens.

Delamare Debouteville, C.: Copépodes parasites des poissons de Banyuls.

Tuzet, O.: La fécondation des éponges calcaires.

Musée Océanographique de Monaco.

Menaché, M.: Du choix d'une eau normale pour la Méditerranée. Bull. No. 980, 1950.

Rouch, J.: La densité de l'eau de mer et les courants au voisinage de Monaco. Bull. No. 968, 1950.

Algérie.

Kruger, D.: Variations quantitatives des Protistes marins au voisinage du port d'Alger durant l'hiver 1949—1950.

Bernard & Lecal: Étude des sédiments marins au large d'Alger — Teneur en Azote et Carbone organique.

Travaux de la Station de Castiglione.

Dieuzeide: La faune du fond chalutable de la baie de Castiglione.

— Notes carcinologiques. 1. *Polybius henslowi* Leach en Méditerranée; 2. A propos d'un Cancérien rare en Méditerranée: *Actea rufopunctata*.

— Sur un *Epigonus* nouveau de la Méditerranée (*E. denticulatus* n. sp.).

— Le Serran impérial (*S. atricaudata* Gnth.) en Méditerranée.

Dieuzeide & Roland: Sur la présence de *Raia brachyura* Lafont en Méditerranée.

Holthuis: Description d'une nouvelle espèce du genre *Periclimenes* Costa sur les côtes algériennes.

Tunisie.

Heldt, H.: L'avenir de la pêche des Thonidés dans les mers tunisiennes. Communication au Congrès des Produits des Pêches de Marseille, Oct. 1950.

Heldt (Mme), J.-H.: Note au sujet de *Xenobalanus globicipitis* Stenstrup sur *Baleinoptera borealis* Lesson en Méditerranée. Bull. Soc. Hist. Nat. Tunis 1950.

Portugal.

Vilela, H.: Vida bentónica de *Tapes decussatus* (L.). Trav. Stat. Biol. Marit. Lisbonne, No. 53, 1950.

NORTHERN NORTH SEA COMMITTEE

1950

By

C. E. Lucas

Only from Scotland was it possible, in association with surveys in the Faroe-Shetland Channel and to the north-west, to make regular cruises in the Northern North Sea throughout 1950, mainly on the western side. For all that, the traditional co-operation between the various countries, both by the organisation of returns of drift-bottles and marked fish, and in many other ways, was continued and even developed. The members of the staff of the Marine Laboratory at Aberdeen wish to take this opportunity to express their appreciation of the invaluable help they have received in this way. They are also glad to be able to record visits from the research vessels "Skagerak", "Gauss" and "Ernest Holt" during the course of the year.

Reports.

The following reports have been received from representatives of the countries concerned:—

Belgium.

Continuation of the study of the herring concentrations exploited by the Belgian trawlers in the northern and central parts of the North Sea (Fladen—Gut—Doggerbank).

The fishery protection vessel has been out of service during the whole year and no plankton samples nor water samples for the determination of the surface temperature and salinity of the fishing grounds have been taken in 1950.

Every week, when hake from the Moray Firth was available, the lengths of 300—400 kg. of fish landed at Ostend were recorded. This enabled us to determine the distribution of the cm.-lengths and their variations throughout the year.

Denmark.

During 1950 the research vessel "Dana" did only a little work in the northern part of the North Sea. Some scattered trawling stations were worked in late May and again in August.

The fixed section of hydrobiological stations between North Unst and the Faroes was operated 31. May to 1. June and again 18.—19. August.

The experimental cutter "Jens Væver" assisted the commercial fleet of herring vessels, especially in the Fladen Ground area, and during the operations in August about 750 herring were marked with, *inter alia*, the Danish red plastic flag type of mark; some other new types of marks (alcathene marks) were also used.

France.

L'aviso "Ailette" de la Marine Nationale a effectué durant la seconde quinzaine de Juin une section hydrologique allant de la fosse de Norvège (par 61° L.N. et 3° E.Gr.) jusqu'auprès de l'île Fair: par 59°37′ L.N. et 1° W.Gr.; comprenant huit stations avec 35 prises de températures et 35 prélèvements d'eau à diverses profondeurs, depuis la surface jusq'à 180 mètres. Les pêches de plancton pratiquées en surface au filet de soie de 13 cm. de diamètre ont montré l'abondance de copépodes calanides.

Norway.

Routine work in the Northern North Sea was continued during 1950 (See Herring Committee, Hydrographical Committee and Plankton Committee.)

The mackerel investigations were continued, and preliminary marking experiments were successfully carried out.

The sprat investigations were extended to four permanent stations situated in fjords in south-western Norway, where hydrographical observations and plankton samples are taken every fortnight throughout the year.

Scotland.

The more extensive cruises which the acquisition of the new research vessels permitted in 1949 were continued in 1950, so that it was possible once again to maintain fairly regular observations in the Northern North Sea whilst visiting the Faroe Plateau at the same time and making regular crossings of the Faroe-Shetland Channel in order to provide information about Atlantic influences upon the Northern North Sea itself.

Meanwhile regular sampling and tagging of the herring stocks off the north-east coasts of Scotland

were maintained by F.R.S. "Clupea" from January to August. Regular inshore sampling was continued by F.R.S. "Kathleen" along the east and north coasts and routine observations on the Scottish lobster stocks on the east, north and west coasts were maintained.

During the course of the year, comparative experiments have been made with both trawl and seine net gear, as well as preliminary investigations on the results of immersing different types of twine in seawater under various conditions. The use of the echometer as a means of indirectly observing the operation of trawls has been continued and, for the first time, underwater photography, with the aid of frogmen from the British Admiralty Research Laboratory, has been used for the direct observation of underwater gear both commercial and scientific.

Reports on the herring investigations in this area will appear elsewhere, but it is noteworthy that underwater photography has already been used for the observation of tagged herring immediately after their release and it is hoped that such observations, both on tagged and normal herring and other marine animals, will be more frequent in the future. The external tagging of herrings in this area developed considerably during 1950, the efficiency of different types of tag being compared. Whilst the percentage of returns is still low, results already have added greatly to our knowledge of the migrations of herring between Britain and the Continent, returns from Scottish east coast drift-net fisheries having been obtained from the Fladen Ground, the region of the Dogger Bank, and more recently from the Skaw.

The Oceanographic Laboratory at Leith (formerly the Department of Oceanography, University College, Hull) continued and developed their survey of the plankton with the Continuous Plankton Recorder as in previous years (see report to the Plankton Committee). At the same time their investigations into the relationships between the herring and the plankton were continued in the Moray Firth.

An important development during the year concerned the correlation found between the numbers of two-year-old haddock entering commercial stocks in the Northern North Sea and the dominant winds blowing over the area during the period when these fish were being spawned and were developing. This work was the result of collaboration between the Hydrographer's Department of the Admiralty and the Marine Laboratory at Aberdeen and was reported to the Council's meeting in October, 1950. It is hoped that a report will be published shortly.

Sweden.

Fishing experiments (line fishery) and investigation of ling in the western and north-eastern parts of the North Sea (July). Fishing experiments (line fishery) of young ling on the grounds in the eastern part of the North Sea (April).

General.

The following publications (other than those in the Council's series) have been reported during the year:—

Pyefinch, K. A.: Studies on Marine Fouling Organisms. J. Iron Steel Inst., Vol. CLXIII, pp. 214—220.

— Notes on the Ecology of Ship-fouling Organisms. J. Anim. Ecol., Vol. XIX, pp. 29—35.

Rae, B. B.: Description of a Giant Squid stranded near Aberdeen. Proc. Malacolog. Soc., Vol. XXVIII, pp. 163—167.

Rees, C. B.: The Identification and Classification of Lamellibranch Larvae. Hull Bull. Mar. Ecol. Vol. III, No. 19, pp. 73—104.

Thomas, H. J.: Fries' Goby in Ross-shire and in Argyllshire. Scot. Nat., Vol. LXII, No. 1, p. 53.

Wilson, E.: Colour Deficiency in Skate (Raiidea). Proc. Zool. Soc. London, Vol. CXXI, pp. 557—559.

SOUTHERN NORTH SEA COMMITTEE

1950

By

R. S. Wimpenny

In 1950 the work done in the Committee's area was more extensive than in any year since the end of the war. The increased effort has been largely due to the resumption of sea duty by the Danish research ship "Dana" and the continuance and development of earlier investigations and projects, particularly in respect of the full-time operation of the Dutch research ship "Antoni van Leeuwenhoek" and the large-scale transplantation of plaice to the Dogger Bank carried out by the Danish Government.

Work at Sea.

Belgium.

Hydrological and biological observations were resumed from the West Hinder lightship on July 27th after an interval of ten years. The ship took up her pre-war position in Lat. 51°22′25″ N. Long. 2°27′45″E. The following observations have been taken from this ship:—

(a) A daily water sample for the determination of the surface temperature, salinity and electrical resis-

tance. According to the programme of the Hydrographical Committee of the Council, the results of the observations of surface temperature and salinity are communicated as regularly as possible to Lt. Cdr. LUMBY, the Fisheries Laboratory, Lowestoft, who was asked by the Bureau of the Council to compile charts of surface temperature and salinity of the North Sea and the English Channel.

(b) A weekly water sample for the determination of sulphates, calcium and magnesium.

(c) A weekly surface phytoplankton sample consisting of the contents of 100 litres of water filtered through a no. 25 silk net.

(d) A weekly zooplankton sample consisting of a haul from the bottom to the surface using a no. 3 silk net.

The fishery research vessel "Hinders" carried out experimental fishing each week in connection with the shrimp investigations and a water sample was taken in Lat. 51°13′50″ N., Long. 2°52′40″ E. This has been done in order to determine the seasonal variations in the temperature and salinity.

Denmark.

During 1950 the research vessel "Dana" operated in the southern part of the North Sea from 28. April to 30. May. A hydrobiological survey was conducted along the fixed lines R and S of the North Sea hydrographical programme (hydrography, stramin net hauls, Hensen net hauls, etc.), and bottom sampling was carried out on the eastern half of the Dogger Bank and the adjacent deeps. In the central part of the North Sea the Danish seine and trawls were operated.

The Wadden-Sea young plaice investigations were continued in the Fanø-Ho Bay area during the autumn, when forty-three fifteen-minute hauls with a young-plaice-trawl were made from a small motor boat.

England.

The steam trawler "Sir Lancelot" and the motor drifter "Onaway" were at work in the North Sea and English Channel throughout the year, while the motor trawler "Platessa" was occupied in the southern North Sea for the last three months together with the motor drifter "Clupea".

The "Sir Lancelot" made twenty-three cruises. Five between January and March and five between April and August were devoted to the Southern Bight spawning grounds of the plaice and the Channel spawning grounds of the pilchard, respectively. In the autumn three cruises were devoted to echo-sounder surveys of herring shoals and plankton observations on the East Anglian herring grounds. From May onwards the ship made a number of cruises to study gear and ship efficiency, a comparative fishing experiment being carried out with a Grimsby trawler in May and with a Danish seiner in July. A survey of the fat content of the plankton of the herring ground off the NE. coast of England was made in June and the regular plankton stations of the Flamborough Line were sampled each month except April, August, November and December.

The motor drifter "Onaway" made seven cruises, the first three and the last to study sprat shoals in the English Channel and North Sea coastal waters, and those between May and August to investigate the possibility of developing the pilchard fishery in the English Channel.

The motor trawler "Platessa" and the motor drifter "Clupea" were chiefly engaged with echo-search work on the East Anglian herring grounds and the two ships co-operated in tests of the Larsen trawl.

France.

Le "Président Théodore Tissier" a travaillé en Manche orientale les 13, 17 et 18 Janvier, y effectuant 14 stations hydrologiques et 29 prises de température et prélèvements d'eau suivant les sections Beachy Head—Vergoyer—Boulogne s/Mer—Dungeness—Cap d'Antifer, île de Wight—les Casquets. Les pêches planctoniques de surface au nombre de 14, ont permis des captures d'œufs de poissons entre Beachy Head et le banc du Vergoyer. Le chalut a été mis en pêche sur le Vergoyer.

L'aviso "Ailette" de la Marine Nationale a fait en Octobre dans le sud de la Mer du Nord, au Silver Pit, 10 stations hydrologiques comprenant 30 prises de températures et prélèvements d'eau et 10 pêches planctoniques de surface.

Trois sorties en mer sur des chalutiers ont été effectuées en Janvier et en Novembre sur les pêcheries des harengs et des merlans de North Hinder, des Bancs des Flandres et de la pointe d'Ailly, et ont donné lieu à l'étude des conditions de températures et de salinités et à des prélèvements de plancton.

Les essais d'un nouveau sondeur à ultra-sons pour la détection des bancs de poisson ont été suivis par le laboratoire de Boulogne.

Holland.

The "Antoni van Leeuwenhoek" worked in the southern North Sea throughout the year making thirty-one voyages. Five were undertaken to study the biology of the plaice larvae, three were made in connection with the migration of young plaice and elvers into the Dutch Wadden-Sea, ten were devoted to routine trawling for plaice, nine to comparative fishing and technical investigations and four to echo-sounding and herring investigations.

Investigations have continued into the density of young Pleuronectidae in the Dutch Wadden-Sea, especially in connection with 0 and I-group plaice.

Norway. } No work reported as having been carried
Sweden. } out in the Committee's area in 1950.

Scotland.

Certain samples and records were taken by Scottish research vessels in the northern section of the Committee's area in August and October. The results are

reviewed where appropriate in the report to the Northern North Sea Area Committee.

Work on the Fish Species.

General.

The efforts made by Holland to obtain an improved collection of statistics referring the different species of fish to the statistical rectangles into which the North Sea has been divided have met with further difficulties in obtaining information about the type of fishing gear used. Many trawlers employed small-meshed trawls for herring and mackerel, and it proved more difficult than in earlier years to separate these voyages from those made with the ordinary otter trawl especially because on many trips both nets have been used.

All species of fish caught by the "Président Théodore Tissier" on the Vergoyer Bank, by the Danish young-plaice-trawl investigations near Esbjerg, and during the shrimp trawl work along the Belgian coast, were recorded and measured.

Porbeagle.

Measurements from over 200 individuals of this species were made at Esbjerg.

Sprat.

English workers were chiefly concerned with echo-sounding surveys on shoals of this species off the SE. coast of England, and with obtaining better quality fish by using different types of gear.

Pilchard.

The spawning grounds of the pilchard were determined for the Channel area as a result of English investigations which also located shoals suitable for capture in good condition by commercial gear.

Mackerel.

Measurements of mackerel from north of the North Hinder in February 1950 and of 1,100 from Utsire between March and May were made by French biologists. The sex-ratio and the state of maturity was followed for the Utsire material. The relation between weight and length was determined at the Boulogne Laboratory.

Cod.

Biometric work on the southern North Sea cod was continued at English ports where 48,260 length measurements were made, 43,500 at North Shields and 4,760 at Grimsby.

Haddock.

Length measurements of this species to the number of 8,287 were made at Grimsby in support of the Scottish investigations in the northern North Sea.

Whiting.

A part of the catch of whiting made to the north of the North Hinder in February 1950, was measured by French biologists who also made numerous measurements and a correlation between length and weight for whiting caught in March between the Sandettié and Ruytingen Banks.

Plaice.

A final large-scale survey of plaice-egg production was undertaken in the Southern Bight in the early part of the year by English biologists. English and Dutch investigations were then devoted to a joint preliminary study of the distribution and behaviour of plaice larvae and metamorphosing stages. It appeared that the larvae go down to the bottom after metamorphosis over relatively large areas sometimes far from the coast.

Fishing experiments in the Dutch Wadden-Sea showed a vertical movement of young metamorphosed plaice in relation to time of day and state of the tide. Plaice of 0 to V-group fished by the Danish young-fish-trawl in the Danish Wadden-Sea near Esbjerg were examined with respect to age, size and food content.

Trawling, along three lines perpendicular to the coast from Scheveningen, Ijmuiden and Texel, was carried out by Dutch workers in order to study the density and growth of the age-groups I—V of the populations along the Dutch coast.

At English ports over 147,000 length measurements were distributed as follows between the various fish markets: Grimsby 26,649, Lowestoft 107,538, Rye Bay ports 14,877. In addition to these over 4,300 were weighed, sexed and examined for age. In connection with the Danish investigations 23,240 plaice were measured at Esbjerg in May, August, October and December, and 522 otolith samples were obtained from six landings. All the plaice caught by the French research ship on the Vergoyer Bank also had their age determined, and length measurements of over 500 in-shore fish were made on the market at Boulogne.

The large-scale transplantation of plaice to the eastern part of the Dogger Bank was continued by Denmark between 28. March and 3. May. The transport of three-quarters of a million plaice was arranged in different ways to study the viability of the plaice, various marking methods, oxygen content in transport vessels and well boxes etc., being used. Three well-cutters transplanted about 215,000 small plaice from the Horns Reef, two transports carried about 85,000 from Nissum Broad and about 480,000 were conveyed by a special basin-cutter. All were released in the same area of the Dogger Bank. In all 780,000 small plaice were transplanted, of which 3,676 were marked. A Catalina flying boat transplanted 500 and the research ship "Dana" 329.

During the investigations of the "Dana" in the central North Sea 766 plaice, mainly of 30 cm. were marked and released where they were caught. Half these fish were marked with an ebonite mark and a red plastic flag. The method yielded several double records.

Work on the structure of the otolith nucleus has been continued in Holland. From this it appears that the percentage of fishes of one year-class showing a certain characteristic otolith structure varies considerably in the same area in the course of a year.

Sole.

An investigation into the stock of soles in the North Sea has been started by an English biologist, and among the first steps a satisfactory method of age-determination is being sought. Samples for age-determination have been taken by French biologists from the Vergoyer Bank in January and length measurements of over 8,464 individuals of this species were made on Lowestoft fish market during the year.

Shrimps.

A biological study of the shrimps of the Belgian coast was continued. Its aim was to ascertain the annual evolution of the stock on the Belgian coast. In addition experimental fishing has been carried out with nets of different widths of mesh (19, 21, 23, and 25 mm.). The material was dealt with in the following way:—

(a) Determination of the quantity of shrimps caught.
(b) The recording of the length distribution of a 1 kg. sample of raw shrimps.
(c) Counting the number of shrimps with or without eggs.
(d) Determination of the commercial and non-commercial quantities of shrimps caught.

In order to assess the degree of destruction caused to the stock of shrimps by certain shrimp-eating species of fish, a certain number of stomachs were examined.

Rational Fishing.

A memorandum outlining future research problems suitable for solution by the modern dynamic theory of fish populations was produced by the Population Section at the Lowestoft Laboratory and circulated to other European fisheries laboratories likely to be interested. The lifting of maximum fish prices brought categories back to the English fish markets in April, and this fact together with the consideration of a new method of using age-census material has meant a special re-examination of market sampling methods in England.

In Holland a start has been made with an investigation into the shape and force occurring in a trawl in action and experiments have been made with different types of nets and on the influence of a tickler chain on the catches. In co-operation with the Admiralty English research workers were able to obtain some useful under-water photographs of parts of a trawl in action. This showed that the meshes of the net were working wide open. The echo-sounder technique was tested by English, Dutch and French workers for shoal location and also for obtaining information on the shape and position of under-water gear.

Publications.

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Carruthers, J. N., & Lawford, A. L.: Water Movements and Winds at the Mouse Lightvessel, Thames Estuary. "Weather" August, 1950.

See also "Southern North Sea", Ann. Biol., VI, 1949.

TRANSITION AREA COMMITTEE

1950

By

Erik M. Poulsen

Denmark.

Erik M. Poulsen

Hydrography.

Observations of temperature, salinity, and in some cases of oxygen content, were made in connection with the experimental fishing.

Plankton.

The regular sampling of plankton (especially eggs and larvae of fish) from light-vessels was continued.

Benthic Food.

Valuations of the bottom were carried out in various waters.

The Fish.

Eggs and Larvae. Quantitative fishing with the ring-trawl and with the Hensen net were carried out from "Biologen" in the periods February—May and October—November.

Flatfish. The density of the 0-group plaice, flounder, turbot and brill was investigated during the summer

months by means of the Johansen young-plaice-trawl used from "Havkatten" along the shores.

Throughout the whole area, from February to December, the densities of the various age-groups of the flatfishes outside the shore waters were examined by means of hauls with small-meshed trawls.

Samples of commercially caught flatfishes were investigated and market measurements of especially plaice were carried out at various fishing ports.

Samples of young plaice caught in Nissum Broad for transplantation were investigated for age, length and number of anal fin rays.

Cod and Whiting. The density of the stock was examined by hauls with small-meshed trawls, and samples were analysed for age, length and racial characters.

Waste Fish. The composition of samples from the commercial fishery was examined.

Predictions of the yield of the mackerel and silver eel fisheries were given.

Crustaceans. The investigations were continued, with special attention being paid to the deep-sea prawn and the Norway lobster.

Norway.

Arendal (Alf Dannevig).

Hydrography. Observations of the temperature and salinity of the sea water at 0, 1 and 15 metres below the surface were made every working day at Flødevigen. In the neighbouring parts of the Skagerak and in the Oslofjord 198 hydrographic stations were worked.

The Fish.

Fish Eggs and Larvae. Material was collected at 105 stations. 339 hauls were made with the egg-net, and 46 with the larvae-net.

Gadidae. The 0-group. Experimental fishing with a shore-seine in the littoral region has been carried out according to the pre-war scheme, 74 hauls having been made on the Skagerak coast and 55 in the Oslofjord.

Older fishes. Experimental fishing with traps has been carried on at Flødevigen.

Herring. Samples of herring have been collected from different parts of the Skagerak coast.

Lobsters.

Statistics from individual fishermen have been collected according to the pre-war scheme.

The Hatchery.

The hatching of cod fry was carried out on a fairly large scale. The rearing of lobsters, however, was this year carried out only on an experimental scale in order to study the effect of different foods on the growth and vitality of the young lobsters.

Experimental rearing of plaice, cod and herring was successful.

Oyster.

The artificial pond gave fairly good results this year. A satisfactory number of spat was collected.

The Biological Laboratory, University of Oslo (Johan T. Ruud).

The laboratory has conducted 8 cruises in the Oslo fjord with R/V "Gunnar Knudsen" between 18. April and 17. November, 1950.

Samples of sea water were collected for the routine observations of salinity, oxygen and nutrients. Samples for the study of the rôle of bacteria in the metabolism of the sea were taken from the sea water and from the muddy bottom deposits. Reports on our results concerning the variation of nitrites and nitrates are in press (Braarud & Føyn, Føyn).

During a cruise on 6. November it was observed that the accumulation of hydrogen sulphide (H_2S) in the deeper layers of the inner basin, the Bonnefjord, was exceptionally high and extensive. A report on this "catastrophe" will soon be published (Beyer & Føyn).

Sweden.

(Arvid R. Molander.)

Environment.

Experimental investigations were made of the effect of certain ecological factors upon the establishment of environmental forms of fishes.

The Fish.

The density of the stock of young (0- and I-group) of **plaice** and **turbot** was investigated along the west coast of Sweden.

Sprat. Material already collected was worked up; informations on the situation of the localities for sprat fisheries along and off the Swedish west coast was collected together with statistics of the landing of sprats at various western Swedish ports.

The collection of statistics of the landings of haddock, lemon sole and plaice at the port of Göteborg was continued with a view to studying changes in the fish stocks.

Publications.

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Jensen, Aage J. C.: Changes in the quality of the herring in the course of the year and from year to year. Rep. Dan. Biol. Stat. No. 51. 1950.

— Amount and growth of herring fry in the Danish waters. Ibid. 1950.

Knudsen, Jørgen: Contributions to the biology of the whiting (*Gadus merlangus* L.) in the Danish waters. Rep. Dan. Biol. Stat. No. 52. 1950.

Larsen, Knud: Mærkning af havørred i Lindenborg å. Sportsfiskeren nr. 1, 1950.

Poulsen, Erik M.: The sprat fishery and the sprat population in the Danish waters. Rep. Dan. Biol. Stat. No. 52. 1950.

— La pêche, la ponte et les races de sprats dans les eaux Danoises. Rapp. et Proc.-Verb. CXXVI. 1950.

BALTIC AREA COMMITTEE

1950

By

Chr. Hessle

Denmark.

(Aage J. C. Jensen.)

The S/S "Biologen" worked both to the south of Møen—Scania and at Bornholm in August and at Møen in October; M/B "Havkatten" worked on the coasts of Seeland and Møen in August.

Hydrography and Plankton.

Observations were made on the hydrography from the "Biologen" in August, and on plankton in August and October.

Biology.

Plaice, Flounder and Turbot. Quantitative fishing experiments were carried out along the coasts using the Johansen young-fish-trawl from motorboats. At Bornholm the hand-push-net was also used. This implement was also used in an investigation of the abundance of young flounder in some fjords in the Belt Sea. The stock of older flatfishes was investigated by quantitative fishing experiments from the "Biologen" in August and October. Market measurement of plaice was started at Bornholm.

Cod. The stock of cod has been investigated by the above-mentioned quantitative hauls from the "Biologen".

Salmon. In December marking experiments were carried out from M/C "Jens Væver".

Larvae. The abundance of herring (and other) larvae was investigated by fishing with a ring-trawl in October.

Finland.

(T. H. Järvi.)

Benthic Food.

Ecological investigations were carried out on *Bosmina maritima* and different Gammarus-species along the coasts and observations on *Turbellaria* were undertaken at Tvärminne zoological station.

Biology.

Biological investigations were undertaken in the district of the town Helsinki (Helsingfors). These investigations included a quantitative analysis of the fish population per hektare.

Sweden.

(Harald Alander.)

The research vessel "Eystrasalt" was kept in commission from June to November and the cruises were extended from the Sound to the northern part of the Gulf of Bothnia. The research vessel "Skagerak" made cruises in the southern Baltic in January and February.

Hydrography.

A number of hydrographic observations were made during the cruises with the research vessels. This work was partly in co-operation with Finnish hydrographers.

Plankton.

A great number of quantitative samples of plankton were collected with the Hensen net from different parts of the area, partly with the aim of investigating a plankton disease in the Gulf of Bothnia.

Biology.

Plaice and Flounder. Measurements of plaice and flounder in commercial catches were carried out on the south coast of Sweden. The stock of flatfish in the Bornholm area was investigated.

Cod. The stock of cod was investigated and several fishing experiments were made in the area from the southern Baltic to the Sea of Bothnia. Samples were collected and analysed as to length, age and maturity.

Sprat. Investigations were made on the stock of sprat in the southern and central Baltic and in the Gulf of Bothnia.

Eel. Marking experiments were carried out in the province of Blekinge on the south coast of Sweden.

Aids to Fishing.

The research vessel "Eystrasalt" has been commissioned for locating shoals of herring with the echo-sounder and for experiments with new types of pelagic trawls.

Reports of other Committees.

HYDROGRAPHICAL COMMITTEE

1950

By

HELGE THOMSEN

Belgium.

(E. LELOUP.)

Since the end of July, when the "West-Hinder" lightship was put into service, the crew have taken a daily water sample for chemical analysis. These observations are carried out in order to determine the surface temperature, salinity and alkalinity at this particular point of the North Sea. The results are communicated regularly to Lt. Cdr. LUMBY, Fisheries Laboratory, Lowestoft.

Once a week, when the fishery research vessel "Hinders" was at sea, a water sample was taken at a single fixed station off the Belgian coast in order to determine the surface temperature and salinity occurring there during the seasons.

Denmark.

(HELGE THOMSEN.)

Cruises.

The eastern halves of sections R and S of the international North Sea scheme were run by the "Dana" from 10.—14. May. Sections across the Faroe-Shetland Channel were worked from 31. May—1. June and from 17.—19. August. In the periods 2.—18. June and 3.—8. August sections were worked north of the Faroes and east of Iceland. From 24.—30. June a section was run along Lat. 62° N. from the Faroes to Greenland. During the first half of July sections, comprising the four permanent sections, were worked along the west coast of Greenland. These permanent sections were also worked by the survey ship "Heimdal", in total at the following times:—

Off Frederikshåb: 4. July, 31. August.
Fyllas Bank: 17. May, 5. July, 1. September.
Lille Hellefiske Bank: 18. May, 7. July, 27. September.
Store Hellefiske Bank: 1. June, 8. July, 15. September.

Observations in Greenland coastal waters were carried out by M/C "Adolf Jensen".

Observations from Liners.

Surface samples were collected from liners on the routes Copenhagen—Greenland, Copenhagen—Iceland and Esbjerg—Grimsby/London.

Observations from Light Vessels and Coastal Stations.

Regular hydrographic observations have been made by the Danish Meteorological Institute as follows:—

1. daily observations of temperature and salinity from 12 light vessels and 16 coastal stations,
2. 4-hourly estimations of the surface current from 12 light vessels,
3. observations twice per month of temperature, salinity and oxygen content in the Bornholm Deep off Christiansø.

England.

(J. R. LUMBY.)

Fisheries Laboratory, Lowestoft.

1. **Research Ships.** In the North Sea, hydrographic observations were made during five plaice-egg surveys in the Southern Bight from January to March. Observations were made on the Flamborough Line in eight months of the year.

In the English Channel, from April to August extensive hydrographic surveys were made in connexion with pilchard-egg investigations. Salinity, temperature, dissolved oxygen, phosphate, and total phosphorus were determined (the last two in conjunction with the Marine Biological Association, Plymouth). Drift-bottles were released.

In the Barents Sea, salinity, temperature, and oxygen observations were made in March, July, and October along the two sections, Norway to Bear Island, and westwards from Bear Island. Temperature observations for fish and temperature surveys started in 1949 were continued.

2. **Commercial Vessels, Lightships, and Ocean Weather Ships.** Routine observations of surface salinity and

temperature were maintained. Observations were started at six positions on a new route, Great Yarmouth to Rotterdam, in December. The frequency is about fortnightly.

The British and Netherlands Ocean Weather Ships continued to take surface observations on passage between Greenock and Stations "I" and "J" and daily on station.

Marine Biological Association, Plymouth.

In January, April, May, and June, four cruises were made in the Celtic Sea to study the hydrography of the Continental Slope, in which R.R.S. "William Scoresby", R.R.S. "Discovery II" co-operated. An account of the first two cruises has been prepared for publication in the Journal of the Marine Biological Association.

The monthly series of observations from Plymouth to International Station E1 have been continued; no marked change from the conditions of preceding years was remarked.

Department of Oceanography, Liverpool University.

Surface temperatures and salinities were observed three times per week at each of nine stations in the Irish Sea.

During several weeks of the summer, continuous and simultaneous records of the pressure on the sea-bottom at two stations in Red Wharf Bay, and of the tidal currents at these stations, were taken. These observations were designed to form a basis for the calculation of the force of friction between a tidal current and the sea-bottom, but analysis showed that the timing of the records of pressure was not sufficiently accurate for this purpose.

Much attention has been given to the analysis of the records of simultaneous fluctuations of a tidal current at two near points. These records were taken during 1949 as part of a study of turbulence.

Admiralty (Hydrographic Department).

The current-measuring programme referred to last year was started at the "Varne" light vessel, in the Dover Straits, in November, 1950. Preparations have been made to extend this programme to the "Outer Dowsing", "Smith's Knoll", "Galloper", and "S. 2" light vessels (the last with German co-operation).

Considerable effort has been devoted to perfecting the instrument known as the Lowestoft Crossbow Float.

The data from the current-measuring programme worked before World War II on board various light vessels have been published in a series of five papers. Attention has been devoted to the subject "Fishery Hydrography", in connection with which correlations aimed at stock recruitment prediction have been made for seven food-fishes.

The "Wind Service" heralded at the 1950 Council meeting has been operated as intended, thanks to German co-operation.

National Institute of Oceanography.

Work has been continued on waves, exchange of energy between the ocean and atmosphere, and development of instruments. The "Discovery II" has been filling gaps in the survey of the Southern Ocean, working mainly in the Indian Ocean and West Pacific sectors. The "William Scoresby" has been marking whales in the South Atlantic and Indian Oceans, and has made a hydrographical and biological survey of conditions in the Benguela Current. Further details are given in the First Annual Report (Cambridge University Press).

The apparatus used for correlating the occurrence of long sea-waves with groups of ordinary waves (Proc. Roy. Soc. A. 202, 1950, 565) has been reconstructed to allow the rapid and automatic production of auto- and cross-correlograms. (The records should be in the form of black and white profiles; the length of record which can be used is 50 inches, and the time scale should be compressed to get as much information as possible in this length of record).

The Institute is supporting Dr. CARRUTHERS in his renewal of current measurements from lightships in the English Channel and North Sea.

Finland.

(G. GRANQVIST.)

Hydrographic material was collected from 20 fixed stations, 8 lightships, 13 tidal gauge stations, 12 tidal pole stations and about 70 ice stations at the same times as previously. Surface observations of salinity and temperature were made from liners on the Helsingfors—Copenhagen—Antwerp line. Hydrographico-chemical work during cruises was done in the Archipelago.

France.

(L. FAURE).

Le navire océanographique "Président Théodore Tissier" a navigué du 9 Janvier au 28 Juillet, travaillant en Manche, autour de Madère, jusqu'au 20° L.N. et 40° W.Gr., aux Açores, aux Canaries, le long de la côte occidentale d'Afrique et en Méditerranée occidentale; depuis Gibraltar et les côtes d'Algérie jusqu'en Tunisie, Sardaigne, région de Naples et côte de Sicile.

Les observations hydrologiques habituelles: prises de températures et prélèvements d'eau aux diverses profondeurs ont été faites au long du parcours, comprenant un total de 537 stations et 1,831 prélèvements d'échantillons d'eau.

L'aviso "Ailette" de la Marine Nationale a effectué un certain nombre de sections hydrologiques dans le Golfe de Gascogne en Mars, en Mer d'Irlande, en Avril, de la Fosse de Norvège jusqu'auprès de l'île Fair en Juin, au sud-ouest de l'Islande en Août, dans la région du Silver Pit en Octobre.

La frégate "Aventure" a poursuivi dans la région de Terre-Neuve et du Groënland en Avril, Mai et de Juillet à Septembre les observations hydrologiques

comportant plus de 300 prises de températures et d'échantillons d'eau à diverses profondeurs.

Les frégates météorologiques "Laplace" et "Mermoz" basées au point "K" par 45° L.N. et 16° W.Gr. y ont fait les observations hydrologiques habituelles à diverses profondeurs et ont effectué des observations hydrologiques de surface sur les routes d'aller et de retour.

Les sections hydrologiques en Manche ont été continuées, en collaboration avec les services du Ministère de l'Agriculture et des Pêches de Grande Bretagne.

Des observations hydrologiques ont été effectuées en Mer du Nord, en Manche, dans le Golfe de Gascogne et jusqu'aux Açores et à Madère au cours des sorties à bord des bateaux de pêche effectuées par le personnel de l'Office Scientifique et Technique des Pêches Maritimes.

Holland.

(J. W. Termijtelen.)

The following investigations were carried out by the named institutions:—

Koninklijk Nederlands Meteorologisch Instituut, De Bilt.

1) Surface temperature measurements and collection of water samples once a week from liners on the routes Hoek van Holland—London and IJmuiden —(Texel—)Hull, from mid-July onwards.

2) Three-hourly surface temperature measurements from the light vessels "Goeree", "Texel" and "Terschellingerbank". During one week in February and one week in June, hourly measurements of temperatures, salinities and currents from the light vessel "Texel".

3) Hydrographic observations in the southern North Sea.

4) Surface temperature and salinity measurements from the Netherlands weather ships on their routes to and from weather stations K and J. Oceanographic observations down to a depth of 500 m. during a three weeks period at station J.

Rijksinstituut voor Visserijonderzoek, Amsterdam.

1) Salinity measurements from the light vessels "Goeree" (once a day), "Texel" (3 times a day) and "Terschellingerbank" (3 times a day).

2) Hydrographic investigations on fishery research cruises in the southern North Sea.

Rijkswaterstaat, Studiedienst Directie Benedenrivieren, Den Haag.

Continuous measurements of currents and suspended material from the light vessels "Goeree", "Texel" and "Terschellingerbank".

Zoölogisch Station, Den Helder.

Hydrographic investigations in the Wadden Sea area.

Iceland.

(Unnstein Stefánsson.)

Cruises. In 1950 two hydrographic cruises were made, the first one from 16. May to 7. June and the second one from 27. July to 1. September. During both cruises observations were made of temperature, salinity and phosphates in the coastal waters all around the country. Off the north coast the usual sections worked were extended north to 68° N. and even to 68°30′ N.

Measurements of the sea-surface temperatures by means of thermographs installed last year (1949) on three ships, one running from Reykjavík to New York and two coastal liners, were continued.

Ireland.

(A. E. J. Went.)

During 1950 it was not found possible to carry out any work at sea on hydrography. Surface temperatures were, however, taken at the Coningbeg Lightship.

Norway.

(J. Eggvin.)

Directorate of Fisheries, Institute of Marine Research.

1) Cruises.

During 1950 hydrographical investigations were carried out on 5 cruises undertaken by "G. O. Sars", on 4 cruises by "Johan Hjort" and on 5 cruises by chartered vessels.

The fields of operation were: in January and February the northern North Sea and off the coast of western Norway. In March and April the Westfjord, off the coast of northern Norway, between 67° and 72° N.L., and the Barents Sea. In May and June off the coast of northern Norway and the Skagerak. In July and August the Norwegian Sea, the waters off north Iceland and West Greenland. In September and October various fjords and off the coast of northern Norway. In November the Sognefjord and the Westfjord. In December the Norwegian Sea. During the whole year some fjords of western Norway.

At 768 hydrographical stations, 10815 samples of salinity, O_2 and P_2O_5 were taken.

2) Permanent Oceanographical Stations.

At the 8 permanent oceanographical stations off the Norwegian coast observations of temperature with collection of salinity samples were made regulary during the whole year.

3) The Sea-Surface Thermograph Service.

Thermograph records were obtained from liners running on the following routes from Bergen: (a) to Newcastle, (b) to Antwerp, (c) to Kirkenes (East Finnmark), (d) to Oslo, (e) to New York, and (f) to weather ships position "M". Thermograph records were also obtained on the route Oslo—Copenhagen—Kristiansand—New York. Surface salinity samples were taken at fixed positions on these routes.

The Flödevigen Sea-Fish Hatchery, Arendal.

Hydrographical investigations were carried out in the fjords of southern Norway, the Oslofjord included. In the Skagerak different sections were worked. At 198 hydrographical stations observations of temperature and salinity were made. In the fjords analyses of the oxygen content were also made.

The Geophysical Institute of the University of Bergen.

The routine programme was carried out in fjords of western Norway. In addition to this, detailed observations have been made of temperature and salinity in the Sognefjord section from Feie (60° 46′ N. Lat.—4° 36′ E. Long.) to about 280 nautical miles towards the north-west in May, June and August.

The Biological Laboratory of the University of Oslo.

Hydrographic investigations were carried out in the Oslofjord, especially in the inner part of the fjord and the Bundefjord. In addition to temperature and salinity observations, analyses of oxygen, phosphate, nitrite, nitrate and ammonium were made.

Surface samples were collected daily during a year, from 1. July 1950, at 8 positions in the Oslofjord.

Portugal.

(A. M. Ramalho.)

No hydrographical work was done in connection with the programmes of the Council.

Scotland.

(John B. Tait.)

The Marine Laboratory, Aberdeen.

From January to November, 1950, except during September, Scottish research vessels operated within the northern and central regions of the North Sea. West Scottish waters were surveyed in March-April, and again in August-September. Traverses of the Faroe-Shetland Channel were made in March, May, June, July, and November, while close attention was given to the Faroe shelf region in April, May, June, and October. A research cruise to Iceland was undertaken in September.

860 hydrographic stations for serial temperature and salinity observations were occupied during the year, entailing the collection of nearly 7000 combined temperature-salinity data. Part of these form the material of repeated observations throughout the year at a number of pre-selected positions, to investigate further the question of accumulated temperature in the sea in relation to biological problems. Oxygen and phosphate determination at surface and subsurface levels were carried out at 338 positions. A few pH measurements were made in the North Sea.

Surface drift-bottles to the number of 2765 were liberated in groups of five during 1950, including a regular output of bottles from, and *en route* to, weather stations I and J in the North-Eastern Atlantic Ocean. Gratitude is expressed to colleagues in Great Britain and abroad for their kind assistance in the matter of the distribution of drift-bottles to weather ships and the payment of awards to the finders in their respective countries of Scottish drift-bottles.

Spain.

(Fernando Balén).

Instituto Hidrografico de la Marina in cooperation with Instituto Español de Oceanografia.

In conjunction with survey work, observations of temperature and salinity were carried out from the "Malaspina" off the west coast of Africa between Punta Dunford and C. Barbas.

Current observations were made off Cadiz.

Tidal observations for obtaining harmonic constants were made at Punta Negri (Spanish Morocco), Santa Isabel, and Kogo (Spanish Guinea).

Sweden.

(Nils Jerlov.)

The two permanent sections P and M were covered in January, February, April, May, June, July, November, and December.

Regular observations of temperature and salinity were carried out at Bornö Station and at 10 Swedish lightships.

In November an investigation of the hydrographical conditions in the fjords of the Swedish west coast was started with a special view to studying the oxygen content near the bottom.

In this hydrographical work much attention was paid to the study of particle distribution in the water at different localities.

PLANKTON COMMITTEE

1950

By

P. Jespersen

Belgium.

(E. Leloup.)

Since the end of July, weekly plankton samples have been taken on board the lightship "West-Hinder".

1. A sample taken at the surface—filtering of 100 litres water (Net Silk no. 25) for phytoplankton.

2. A sample taken from the bottom to the surface (Net Silk no. 3) for zooplankton.

Denmark.

(Poul Jespersen.)

1. During the year the investigations on the food of the herring in the waters round Bornholm have been continued.

2. Biological investigations on zooplankton organisms in the waters round the Faroes have been started with special relation to their importance as food for the herring.

3. The investigation on the quantitative distribution of larger plankton animals in different parts of the Atlantic north of 50° N. Lat. has been carried on as in previous years.

4. The examination of phytoplankton collected during the cruises of the "Dana" 1947—48 in the southern North Sea and in North Atlantic waters has been continued.

5. The working up of material of deep-sea copepods has been continued.

6. The examination of phytoplankton in Præstø Fjord (Seeland) has been continued and a report has been published.

7. A paper on the occurrence of *Nitzschia frigida* in Roskilde Fjord (Seeland) has been published.

Publications.

Grøntved, Jul.: The phytoplankton of Præstø Fjord. Folia Geographica Danica. Tom. III, No. 6.

— Phytoplankton Studies. 1. *Nitzschia frigida* Grun., an Arctic-Inner-Baltic Diatom found in Danish Waters. Kgl. Danske Vid. Selsk. Biol. Medd. Vol. XVIII. No. 12.

England.

Lowestoft (R. S. Wimpenny.)

In the early part of the year five cruises were made by the "Sir Lancelot" to the plaice spawning grounds of the Southern Bight. Some additional and modified gear was used with success on these cruises. In addition to the ordinary Hensen net a larger version, the Hensen larva net was operated. For taking young fish near the bottom an Agassiz trawl was fitted with a mosquito netting bag. This latter gear made important collections of metamorphosing plaice and proved that young plaice may metamorphose in quite deep water.

Between April and August five extensive cruises were made in the English Channel which was covered on each occasion by a grid of between sixty and ninety stations. The main object of these cruises was to map the area for pilchard eggs using the Hensen larva net, but phytoplankton, flagellate, temperature and salinity, phosphate and oxygen samples were also taken at certain stations. The results so far apparent suggest that the pilchard eggs were widely distributed throughout the area between May and July, the numbers being smaller and limited to the west in April and August. The use of the echo-sounder repeatedly revealed an upper shallow scattering layer which ascended at dusk and which was thought to be caused by small fish. The very substantial plankton material collected by these two series of cruises is at present being worked up.

Regular observations along the Flamborough Line had to be omitted as a result of weather and other causes in April, August, and November. Both dry-weight and fat content for the Hensen net collections of the Flamborough Line were above the previous year, but for critical stations of a cruise off the NE. coast in June the fat content was higher and the dry-weight lower than in the previous year.

Plankton surveys carried out during the East Anglian herring season in connection with echo-surveys of herring shoals, revealed concentrations of *Rhizosolenia styliformis* up to 300,000 cells per $m.^3$ in the neighbourhood of the Norfolk Banks.

In the Arctic, two lines of Hensen net stations, one 75 miles west and the other 65 miles south-west of Bear Island were worked on eight cruises between February and November. The heaviest catches were made over deep water off the western edge of the bank from May to July and in the shallower water within 20 miles west and 30 miles south of Bear Island in July and August. In all these cases the dominant species in the catches was *Calanus finmarchicus*.

Stramin net hauls were made in the fishing areas all around Bear Island from April to November. The most striking feature of these catches was the presence of *Limacina helicina* from June to August, mainly within the 100 fathom line.

Atlantic plankton samples using a fine-meshed vertical net hauled from 50 metres to the surface were made at Ocean Weather Ship positions "I" and "J". A characteristic feature this year has been the abundance of doliolids.

A paper on the seasonal variation in the phytoplankton at these positions in 1948 and 1949 was read to the Plankton Committee at the 1950 meeting of the International Council for the Exploration of the Sea.

Plymouth (F. S. Russell).

Dr. H. W. Harvey has continued research on the physiology of marine diatoms, in collaboration with Dr. C. P. Spencer of the Bangor Marine Laboratory who by using antibiotics has obtained diatom cultures free from bacteria. In this field the main effort has been towards developing methods of investigation.

Further information on the composition and abundance of marine planktonic flagellates has been obtained by Dr. Mary Parke by the isolation of individuals from the plankton and the maintenance of species-pure cultures. The seasonal occurrence and vertical distribution of phytoplankton throughout the year has been followed by Mr. G. A. Robinson.

The regular observations made with the 2-metre stramin ring-trawl have been continued by Mr. P. G. Corbin. There has been a slight improvement in the macroplankton production over the low level of the last few years.

Experiments made by Dr. D. P. Wilson, using the polychaetes *Ophelia bicornis* and *Sabellaria alveolata* and the sea urchin *Echinus esculentus*, have shown that larval development may be affected by the nature of the surrounding water. Larvae developed much more normally and healthily in water collected from the Celtic Sea than in water from the English Channel off the Eddystone.

Port Erin (J. S. Colman).

Surveys of horizontal distribution in relation to water masses and water movements have been continued by Dr. D. I. Williamson using Hardy plankton indicators and tow-nets. The area within about 20 miles of the south of the Isle of Man has been covered at intervals of from 1—2 months throughout the year, and more extended surveys covering most of the Irish Sea were made in the spring and autumn. The possibility of using the distribution of the two forms of *Calanus finmarchicus* in interpreting water movements in the area shows great promise.

The dispersal of larval herrings from spawning grounds off the east coast of the Isle of Man has been further studied by Mr. A. B. Bowers.

Dr. H. H. Liao has investigated the distribution throughout the year and certain features of the ecology of a number of macroplanktonic species in relation to their importance as food of inshore fishes.

France.

Office des Pêches, Paris (Mlle J. Fleury).

Le Service Plancton a continué le triage et l'étude du phytoplancton et du zooplancton provenant de pêches faites:

— au cours des croisières du "Président Théodore Tissier", de la frégate "Aventure" et de l'aviso "Ailette";

— à bord des frégates météorologiques françaises stationnées au point "K";

— par les laboratoires ostréicoles de l'Office Scientifique et Technique des Pêches;

— et de prélèvements stomacaux effectués sur des lots de poissons étudiés dans les laboratoires biologiques côtiers.

De nombreux triages des collections et des listes d'examen ont été établies; elles permettront l'étude des variations saisonnières du plancton des côtes françaises de l'Atlantique et de la Manche.

Plusieurs rapports ont été rédigés sur:

— le plancton de la Mer de Barentz et de la Mer du Nord. Croisière du "Miss Jacqueline" Année 1948. (Mlle Fortin, Mlle Fleury);

— les copépodes pélagiques de la Manche capturés en surface au cours de la croisière du navire océanographique "Président Théodore Tissier" en Juillet 1946 et en Mai, Septembre et Novembre 1949. (Mlle Fleury);

— la répartition des Diatomées recueillies dans la Manche au cours des croisières du "Président Théodore Tissier" en 1946 et 1949. (Mlle Fortin);

— les Diatomées récoltées au cours des croisières du "Président Théodore Tissier" en 1948. (Mlle Fortin);

— examens des contenus stomacaux de sardines prélevés à Belle-Isle. (Mlle Fleury).

Algeria (F. Bernard).

Le "Comité d'Océanographie et d'Étude des Côtes de l'Algérie", institué par la Marine Nationale française avec le concours de divers spécialistes, a commencé en 1950 des recherches suivies sur les fonds et le plancton, de 2 à 54 milles au large. Grâce à deux navires, on a pu prospecter selon des radiales nord—sud les méridiens suivants: Nemours, Oran, Ténès, Alger, Bougie, Philippeville, La Calle. De plus, le professeur Bernard a continué des mesures d'éclairements sous-marins et l'inventaire détaillé du plancton de la baie d'Alger.

Au total, 512 prises d'eau et 118 prises de zooplancton au filet fermant, de 500 m. à la surface, ont été examinées. Les volumes du macro- et du nanoplancton furent estimés, ainsi que leurs principaux constituants. Les agents physico-chimiques mesurés furent: températures, salinités, phosphates et nitrates. Les groupes suivants sont déterminés régulièrement: Copépodes (Professeur Rose et R. Vaissière), Chétognathes et Tuniciers (Mlles Hamon et Jourdan), Siphonophores (J. Cachon), larves de poissons (Dr. Dieuzeide), Radiolaires et Coccolithophorides (Mme J. Lecal-Schlauder).

En dehors des deux publications citées plus loin, deux travaux plus étendus sont à l'impression aux "Annales de l'Institut Océanographique". Le premier, par F. Bernard, concerne le courant atlantique au large de l'Algérie et son plancton. Le second, par Mme Lecal-Schlauder, est une révision des Coccolithophorides nord-africains, avec étude de leur distribution et de leur cytologie.

Publications.

Bernard, F.: Notes sur la distribution du plancton au large d'Alger. Arch. Zool. Exp. et Gén., Vol. 86, pp. 103—113, 1950.

Lecal-Schlauder, J.: Études sur les Coccolithophorides d'Afrique du Nord. Bull. Soc. Hist. Nat. Afr. Nord, p. 143, 1950.

Holland.

(B. Havinga.)

It was not possible to carry out any work on plankton during 1950.

Iceland.

No report received.

Ireland.

(A. E. J. Went.)

No work has been done on plankton during 1950.

Norway.

Bergen (Kr. Fr. Wiborg).

As in previous years samples of zooplankton were taken with the Clarke-Bumpus plankton sampler in coastal waters and on the banks off northern Norway during May and June, in order to study the distribution of fish eggs and larvae. Larvae of cod were extremely scarce as compared with the previous year. A report on the work done with the C.-B. plankton sampler during 1948 and 1949 has been published.

The plankton sampling which was started in the autumn of 1948 at 4 stations along the coast of Norway has continued during 1950. Vertical hauls are taken with a Nansen net usually every fortnight. The material is continually being worked up. A large number of *Salpa fusiformis* occurred at the stations off Möre (Ona) and off Lofoten (Eggum) during September and October.

In connection with the investigations on sprat and herring, samples of zooplankton have been taken with a Nansen net in some fjords south of Bergen every fortnight throughout 1950. The material has been worked up, and a short report published (Kaare Gundersen). A more complete report is in preparation.

Zooplankton has also been sampled with a Nansen net on the cruises of M/S "G. O. Sars" on a traverse from north Norway to Bear Island in April and on a number of stations in the Norwegian Sea during July and August. The material has partly been worked up.

The sampling of zooplankton from the weather ship at the position 66° N. 02° E., has continued during 1950. The material is now being investigated at the Directorate of Fisheries in Bergen.

In the Skagerak, horizontal hauls with a meter net have been made at different depths on two cruises, one during spring and one during autumn, with the aim of investigating the occurrence of eggs and larvae of sprat and mackerel. (Gunnar Dannevig.)

University of Oslo (Th. Braarud).

I. **Surveys and Taxonomical Work.**

(a) North Sea survey of May 1948.—The microscopical examination of the extensive material of quantitative phytoplankton samples continued (K. R. Gaarder and O. Nordli).—See also the report from Denmark.

(b) Weather ship "M" in the Norwegian Sea.—The quantitative phytoplankton material covering 13 months has been examined by P. Haller Nielsen and a report has been prepared. It is not going to be published until some additional material, collected by "Armauer Hansen" in the vicinity of position "M" has been worked up in 1951.

(c) Weather ships "Item" and "Jig".—The quantitative examination of the 1 litre samples from the surface on phytoplankton was started (R. W. Holmes).

(d) Oslo fjord, summer of 1946.—A material of quantitative phytoplankton samples taken at two anchor stations was worked up and a manuscript on vertical migration of dinoflagellates on these stations was prepared (G. Rytter Hasle). It will be published in 1951.

(e) "Michael Sars" 1910.—The final report on the diatoms was prepared (K. R. Gaarder).

(f) *Halosphaera viridis*.—An all-year investigation of this plankton alga with weekly collections from the Oslo fjord was started (T. Braarud, K. Horn and E. Nordli).

II. **Experimental Work.**

(a) Salinity as an ecological factor in marine phytoplankton was studied experimentally on cultures representing the following taxonomical groups: Gryptomonadineae, Coccolithineae and Dinoflagellata (T. Braarud and E. Nordli).

(b) Form variation in clones of Ceratia was described and compared with those observed in an extensive material from the Oslo fjord (G. Rytter Hasle and O. Nordli). A report on this work has been prepared. Further studies on the variation in *Ceratium tripos* with special stress on the formation of *f. truncata* in cultures, are in progress (E. Nordli).

(c) Preliminary experiments on the production of poison in marine dinoflagellates with reference to the problem of mussel poisoning and mass mortality of fish in "red water" were started. Cultures of *Goniaulax polyedra* were shown to produce poison.

III. Chemical Work.

(a) Composition analyses of *Goniaulax polyedra* from cultures were carried out in connection with studies of methodological problems (K. Baalsrud).

(b) Similar work on thecate and athecate dinoflagellates and of the coccolithophoride *Syracosphaera carterae* was started (L. Smevik).

Publications.

Braarud, Trygve: Taxonomical Studies in Marine Dinoflagellates. Nytt Mag. f. Naturvid. 88.

Nielsen, Per Haller: An auxiliary Apparatus for Plankton Studies by means of the Sedimentation Method. Journ. du Conseil, XVI, 3.

Nordli, Ottar: Precipitate in Sea-Water Samples for the Study of Plankton. Journ. du Conseil, XVI, 3.

— Dinoflagellates from Lofoten. Nytt Mag. f. Naturvid., 88.

Nordli, Erling: Resting Spores in the Marine Dinoflagellate *Goniaulax polyedra* Stein. Nytt Mag. f. Naturvid., 88.

Wiborg, Kr. Fr.: Utbredelse og forekomst av fiske-egg og fiskeyngel på kystbankene i Nord-Norge våren 1948 og våren 1949. Forelöpig beretning. Fiskeridirekt. småskrifter, Nr. 1. 1950.

Scotland.

Aberdeen (J. H. Fraser).

Plankton samples were collected by the Scottish research vessels in 1950 over a wide area from the Dogger Bank to Iceland with intensive surveys of the Faroe area.

The main cruises were:—

1949:	
Oct./Nov.:	Northern and central North Sea, Faroe.
1950:	
February:	North-western North Sea.
March:	West Scottish coast, Shetland, Faroe.
April:	North Scottish coast, Faroe.
May, June:	Northern North Sea, Shetland, Faroe.
July:	Central North Sea, Faroe.
August:	Central North Sea, east and west Scottish coasts.
September:	Faroe, south Iceland, outer banks.
October:	Northern and central North Sea, Faroe.
November:	Northern North Sea, Shetland, Faroe.

Sampling was carried out by means of the International Standard fine silk net (vertical), Hensen egg net (vertical), 1-metre (horizontal and oblique) and 2-metre ring net (vertical). The 2-metre net has not been used in Scotland since 1939, and it has now been rebuilt, of 30 mesh silk and with folding frame for ease of storage. It is mainly intended for use in the estimation of larval fish populations.

The primary object of the intensive Faroe survey has been the estimation of haddock eggs and larvae and the assessment of survival of the 1950 haddock brood. The results of the fish egg and larval surveys are reported by Mr. A. Saville in the North-Western Area report and details of the plankton of the area are given in *Annales Biologiques*, Vol. VII.

Edinburgh (K. M. Rae).

In April, 1950, the staff of the Oceanography Department, University College, Hull were transferred to the Scottish Marine Biological Association. The programme of work, which remained essentially the same, was conducted from the Edinburgh Laboratory.

In the Continuous Recorder Survey some 35,000 miles were sampled, tows being taken on regular routes as follows:—

	Records	Miles
Hull to Rotterdam	11	900
Hull to Hamburg	7	1,500
Hull to Copenhagen	13	4,100
London to Stockholm	7	1,700
Leith to Copenhagen	14	5,500
Leith to Lerwick	14	2,400
Pentland to Oslo	7	1,000
Bergen towards Weather Station "M"	10	2,800
Glasgow towards Weather Station "I"	14	5.200
Glasgow towards Weather Station "J"	16	6,200
Land's End towards Weather Station "J"	5	2,200
Pentland towards Weather Station "A"	4	1,800

More sampling was possible in the Atlantic than in previous years, thanks to the assistance of the "Koninklijk Nederlands Meteorologisch Instituut" which arranged for the weather ships "Cumulus" and "Cirrus" to tow the Recorder. On a revised P.I.C.A.O. schedule these ships did turns of duty on stations "A" and "I" and so obtained records from Pentland Firth north-westwards towards Iceland and from the mouth of the English Channel north-west across the Celtic Sea. Later, using these vessels, it will be possible to take occasional tows south-west from the mouth of the Channel towards station "K".

Analyses of all the samples were completed and details of the plankton are available to any laboratory that may be interested. Particular attention was paid to the distribution of the copepods and the larvae of the lamellibranchs, echinoderms, decapods and fish, and also those forms which might indicate water movements. Measurements were made of the diameter of *Rhizosolenia styliformis* and the length of *Ceratium fusus* taken from various areas.

During the Scottish summer herring fishery, the Plankton Indicator was used by a number of drifter skippers to provide a comparison between their herring catches and the plankton in the immediate vicinity; 500 such samples were collected. About 700 herring stomach samples were analysed and a proportion of the fish from which they were taken were categorized by the Scottish Home Department Laboratory, Aberdeen, to determine whether the changing feeding habit during the season was due to the arrival of different herring stocks in the fishery. The size and position of all herring catches landed at Fraserburgh were recorded in an effort to trace the distribution of the fish on the ground.

Millport (S. M. MARSHALL).

A considerable amount of work has been done on the biology of the planktonic copepod *Calanus*. The two forms as described by REES, *C. finmarchicus* and *C. helgolandicus* have been identified although the second occurs only in small numbers.

In the autumn of 1949 a series of experiments was started to find out whether any diurnal rhythm existed in the feeding behaviour of *Calanus* such as had been suggested by WIMPENNY. In early 1950 these laboratory experiments were supplemented by field observations made once a month in which tow-nettings are taken every four hours for 24 hours at 3 different depths. Neither the laboratory nor the field investigations show any diurnal rhythm in feeding. In the field feeding is very much more intense near the surface than at greater depths because the phytoplankton on which *Calanus* feeds is most abundant there.

The effect of various factors, such as concentration of food, light, and temperature, on feeding has been studied and also the effect of feeding on egg laying. Some work has been done on the size of food particle which can be taken by the various developmental stages. It is found that copepodite stage I can take flagellates measuring 40—50 μ and Nauplius stage VI those of 20 μ.

A number of samples of barnacle larvae were collected but the results require confirmation which it is hoped to obtain by further collection.

In the newly built concrete oyster tank a record has been kept of the plankton occurring throughout the season. Zooplankton, phytoplankton and μ-flagellate counts were made. On the whole the plankton was poor, the number of μ-flagellates being lower than is usual in successful oyster breeding, but they were numerous at times. *Nitzschia* was the most important diatom. Oyster larvae were present from July till September but no settlement took place.

Spain.

No report received.

Sweden.

(H. HÖGLUND.)

Owing to shortness of scientific staff no plankton work has been done.

HERRING COMMITTEE

1950

By

ÁRNI FRIÐRIKSSON

I. Atlantic Waters.

Iceland.

(ÁRNI FRIÐRIKSSON.)

During the periods 16. May—7. June and 27. July—1. September cruises were made during which planktonic herring larvae were collected off the south and west coasts of Iceland.

Investigations were made in order to locate the spawning places of the spring spawning herring. For this purpose more than 2000 haddock stomachs were investigated ("spawny haddock") and about 400 bottom samples (Petersen's 0.2 m.^{2} bottom grab) were collected during March—May off the south and southwest coasts. Forty-nine spawning places were found in the area between the Westmanna Isles and Reykjanes, 39 by means of "spawny" haddock, 8 by means of spawn on the sea bottom, and in one case herring was found spawning.

A small motorboat M/S "Ørn" was chartered for July and August in order to tag north coast herring, but owing to an almost complete failure of the fishery we only succeeded in tagging 1321 fish. Eleven herring tags were returned from Icelandic reduction plants.

During July and August 2600 north coast herrings were examined with regard to length, weight (not in all cases), sex, maturity, and intestinal fat. The total number of vertebrae was counted and scale samples were collected for age-determination. A sample consisting of nearly 600 small herring (1-year-olds, 8—16 cm.) from Skagafjord was also examined, 670 stomach analyses were carried out in Siglufjord, and some hundred herrings from Faxa Bay were also

examined, and their otoliths collected for age and race investigations.

A further 24 samples of south and south-west coast herrings comprising 5802 fish were examined during the period 13. August 1950 to 5. January 1951. Thus the total number of herrings examined during the year was about 9000.

Denmark.

(Å. V. TÅNING).

Faroe-Iceland Area.

During June and again in August the Danish part of the international herring programme in the waters from Norway to East-Greenland was accomplished. In June several sections were operated north of the Faroes, especially in the area of greatest herring concentration between 62°55′ N. Lat—63°30′ N. Lat. and between 4° W. Long.—5°30′ W. Long. Bendix echo-sounder and Atlas echo-sounder were used, the first-mentioned instrument was in constant use along all sections; hydrographical sections (partly by bathy-termograph) were operated; drift-bottles were liberated all over the area; plankton samples were collected and drift-net used to procure samples of herring. A close connection was demonstrated between the occurrence of herring and the extension of the East Iceland arctic current. Norwegian-Icelandic herring were abundant in the whole area investigated 160 n.miles north and north-east of Enniberg on the Faroes.

In August a series of pelagic stations were operated along the south and east coast of Iceland in order to study the distribution and abundance of larvae of the summer spawning herring (see Ann. Biol. VII). Moreover the area from east Iceland along 65°20′ N. Lat. as far east as 3° W. Long. and down to the Faroes was again investigated in the same manner as in June. The herring had migrated north and were scarce south of about 65° N. Lat.

Norway.

General Work (FINN DEVOLD).

Routine work was continued in 1950. During the winter herring season January/March, 38 samples were secured from different localities off west Norway. From other areas the following numbers of samples were collected:— Skagerak 2 samples, Viking Bank 1 sample, fat and small herring mainly from north Norway 10 samples, and, from various parts of the Norwegian Sea 8 samples. Each sample comprised about 200 individuals. The age distribution is given in the *Annales Biologiques*.

Two cruises were carried out by the R/V "G. O. Sars" in the open ocean with the main purpose of locating herring. From 10. July to 24. August large areas of the Norwegian Sea were investigated by the use of asdic combined with fishing experiments.

During the second herring cruise with "G. O. Sars" in December, an attempt was made to locate the spawning schools of herring on their way to the spawning grounds off western Norway.

Great concentrations of herring were detected north of the Faroe Isles, and we succeeded in following the schools on their way into the Norwegian coastal waters.

Tagging Experiments (OLAV AASEN).

The herring tagging experiments with internal tags were continued during the year 1950 in collaboration with Iceland. Some 20,000 herring were tagged in Norwegian waters and an additional 500 during the summer cruise with R/V "G. O. Sars". 67 tags were recovered from the taggings in 1948, 1949 and 1950, 11 of them from fish tagged at Iceland.

Special Investigation (OLAV AASEN).

Samples have been secured from a local herring "race" in the Lusterfjord, hitherto not investigated. Some 1500 specimens have been examined.

II. North Sea and Adjacent Waters.

Scotland.

(H. WOOD.)

During the early months of 1950 "Clupea" made a survey of the herring grounds in the Forth area. Although no unusual features were observed in the hydrography of the region the scarcity of adult spring-spawning herring persisted. Adolescent herring on the other hand, the majority hatched in the autumn of 1947, were numerous within the estuary and maintained a relatively successful winter fishing.

Sampling of the herring in the northern and north-western North Sea began in April with samples of catches from the region of the Coral Bank and concluded in October with samples of trawl catches from the Fladen Ground.

One of the most outstanding features was the temporary predominance of the year-class autumn 1946 on the grounds off Fraserburgh and Peterhead. This class formed about 60 per cent. of the catch between early May and mid-July. At the approach of the spawning season, however, the 1941 and 1942 year-classes came into special prominence whereas the previously predominating 1946 class contributed only about 12 per cent. to the catches. This change in age composition may be linked up with some important results obtained from tagging experiments.

During the year tagging was carried out mainly on "Clupea" but also on commercial vessels on a considerably greater scale than in the previous year. Four different types of tags were used. Five thousand one hundred and eighty-six herring caught in drift-nets were tagged and liberated and of this number 19 have so far been recovered at intervals extending up to 257 days. One fish tagged off Fraserburgh in May was recaptured off North Shields in August. Two tagged in the Fraserbourgh/Peterhead area in May and one tagged off Fraserburgh in July were

recovered on the north edge of the Dogger Bank in August and September, while the most notable record to date is that of a herring tagged off Peterhead in May and recaptured in the neighbourhood of the Skaw, Denmark, in February, 1951.

The experiment was also tried of tagging herring caught by trawl on the Fladen Ground and of the total of 2,627 tagged so far 9 have been recovered. Little was learned, however, from these latter experiments because the recoveries were all made in the region of the point of liberation and in every case only a few days after liberation.

Extensive echo-sounding surveys were undertaken and efforts were made with partial success to obtain information on the nature of scattering layers.

Denmark.

Marine-Biological Laboratory (Å. V. Tåning).

The experimental cutter "Jens Væver" assisted the herring fishing cutters in the Fladen Ground area during July-September. Periodically a biologist was onboard and various observations were taken, *inter alia* were samples of herring measured, scaled, sexed, etc. and frozen herring samples were forwarded to the laboratory. In August (14.—15.) about 760 herring were marked with different types of plastic external marks; a combined plastic-iron mark was also used. Silver wire and different kinds of nylon thread were used to fix the mark anterior to the dorsal fin.

Samples from the winter fishery off Horns Reef were examined in the laboratory, and in April a sample of spawning herring from the Wadden Sea (Ho Bay) was obtained.

Danish Biological Station and Fiskeri-laboratoriet (Aage J. C. Jensen).

The following samples of the commercial fisheries were investigated for age (from scales), sex, maturity, racial characters, fat content etc.: 1 sample of small herring caught for processing at Esbjerg in August, 15 samples from the Skagerak and northern Kattegat and 21 samples from the inner waters.

Marking experiments were carried out at Skagen-Frederikshavn 1.—5. April, at Spodsbjerg, Langeland (southern Great Belt) 19.—20. October, and at Copenhagen 9. November. A total of about 700 herring were marked. The Lea tag was used. Special attention was paid to the significance of scaliness, of damage due to marking, and of the thickness of the needle etc.

Sweden.

(Hans Höglund.)

The following investigations were cared outri during 1950:—

1. Tagging experiments.

(a) In February-March 1016 herring, mainly spring spawners, were tagged and released off the northern part of the Swedish west coast.

(b) In late April and early May 800 fish, mainly autumn spawners, were tagged and released at the above-mentioned place.

(c) In late August 124 tagged herring were liberated in the Fladen ground area.

Up to and including March 1951 170 tagged herring had been recaptured.

2. During the year 24 herring samples from the Skagerak and the North Sea were analysed.

3. Investigations in the Baltic. During the cruises of the research vessel "Eystrasalt" a great many fishing experiments were made in different parts of the Baltic, chiefly with the pelagic trawl, in order to study the composition of changes in, and distribution of the stock of herring in the Swedish archipelagoes, along the coast and in the open sea. Samples from all parts of the area were collected and analysed for race, age and time of spawning.

Holland.

(I. de Veen.)

The drawing of herring charts was continued; for the first time data on the quality of the herring (matjes, full or spawning) could be added.

Investigations of the vertical movements and distribution of North Sea herring and of the old problem of whether there are differences between the herring caught by drift-net and those caught by trawl were begun. Samples from both kinds of catches were taken for the determination of race characteristics, stage of maturity, stomach contents and structure of scales. Full use was made of the echo-sounder for the location of the shoals.

Belgium.

(Ch. Gilis.)

During 1950, the study of the herring concentrations exploited by the Belgian herring trawlers was continued. The following samples were analysed:—

1. Of full herring from the northern and central parts of the North Sea from August till October (1,200 herrings).
2. Of spent herring on the Belgian and French coasts during the winter 1950—1951 (681 herrings).

The observations covered all biological values: length, weight, sex, stages of maturity, fat, age, vertebrae, keeled scales (K_2) and stomach contents. The landings were tabulated according to time and the power of the trawlers spent fishing for each rectangle of 1° Longitude E. and 30′ Latitude N.

Owing to the absence of a fishery cruiser from the area, no hydrobiological observations were carried out on the fishing grounds where the herring concentrations were exploited during 1950.

France.

(J. Ancellin.)

L'étude des harengs du sud de la Mer du Nord et de la Manche Orientale basée sur les échantillons

prélevés au cours des pêches d'hiver 1949—50 a été poursuivie. Les observations ont porté sur la taille, l'âge, le stade sexuel et la moyenne vertébrale.

Les mêmes observations ont été reprises au cours des pêches d'hiver 1950—51, dans la même région.

La population de harengs de la région des Fladen, du Gut et de Bruce-Garden a fait l'objet d'observations sur la taille, le stade sexuel, l'âge et la moyenne vertébrale d'après les échantillons prélevés d'Août à Octobre.

Une première série de marquages de harengs a été réalisée à titre d'essai, à bord d'un chalutier, au cours du mois de Décembre en Manche Orientale.

Au total les observations sur l'âge et la moyenne vertébrale ont porté pour l'année 1950 sur 1800 individus. Environ 3500 individus ont été mesurés.

SALMON AND TROUT COMMITTEE

1950

By

Sven Sømme

Denmark.

(C. V. Otterstrøm and Erik M. Poulsen.)

1. Biological Investigations.

The biological investigation of streams was continued with a view to preparing satisfactory schemes for the liberation of salmon and trout fry and fingerlings. The study of the life histories of sea trout and brown trout was carried on. About 800 samples of scales and a few samples of stomach contents of trout from both the sea and some streams were collected and partly analysed. In some small trout streams electric fishing was carried on in order to determine the number of fish present, the age composition of the stocks of trout and eel, and both the time of year and the causes of the numerical reduction of the different age-groups of trout. Markings of sea trout were performed in 4 places: 1) In the mouth of the river Lindenborg å (outlet into the Limfjord), 2) in the river Gudenå and Randers fjord, 3) in the sea at Gerrild Strand (the east coast of Jutland) and 4) in the inner part of Roskilde fjord in Sealand. In all, 1162 trout were marked. Of these, 22 trout kelts, 10 silvery trout and 5 trout smolts were tagged with celluloid tags in the dorsal fin and liberated in the river Lindenborg å; 7 spent brown trout and 13 sea trout kelts were tagged in the same way and liberated in a tributary (Brandstrup brook) of the river Gudenå; 3 silvery trout were tagged in Randers fjord and 1 silvery trout and 1 trout smolt at Gerrild Strand. In Roskilde fjord, 1100 half-yearlings of artificially hatched sea trout were marked by cutting away the adipose fin and liberated in the fjord. In some streams the food of the pike was studied in order to check the presumed harm done by this fish in trout streams.

The experiments on turbines were continued in order to find out the danger that turbines present to the descending salmon and trout smolts and to eels.

In the Baltic, experimental fishing for salmon was carried out by the M/S "Jens Væver" during the autumn. Some of the salmon caught were marked, and measurements and scale samplings were undertaken.

2. Artificial Propagation.

As usual, hatchery operations were carried out at a number of centres by various fishing clubs and at a few power stations. These were supported and maintained partly from public funds and partly by giving permission to catch salmon and trout during what is normally the close season. Fry and fingerlings, especially of sea trout, were liberated either in rivers with free access to the sea or in estuaries.

3. Statistics.

The collection of information about the yield of the salmon and sea trout fishery and the weight of individual salmon and sea trout in the river Gudenå and the Randers fjord was continued. This was supplemented by similar investigations in a few other waters in order to determine the age composition and length variation of the stock of sea trout.

4. Publications.

Larsen, Knud & Sigurd Olsen: Ochre Suffocation of Fish in the river Tim Aa. Drainage water from lignite pit as cause of the catastrophes at the Nørre Esp trout pond farm 1941—1947. Rep. Dan. Biol. Stat. 50, 1947, Copenhagen 1950.

Larsen, Knud: Mærkning af Havørred i Lindenborg å 1948—49. Sportsfiskeren nr. 1. 1950.

— Laks og laksefiskeri, særlig i Danmark, Sverige og Norge. København 1950.

England.

(F. T. K. Pentelow.)

In 1950, the tagging of salmon in the sea was, in accordance with the decision of the Committee at Edinburgh in 1949, carried out on the coast of South Wales to investigate stocks of salmon in the Irish Sea. The site chosen proved unsuitable and only 4 fish were tagged. Members of the staff collaborated in the tagging of fish on the coast of Northern Ireland. 444 sea trout were tagged off the coast of East Anglia during July and August. 44 tags have been recovered.

Finland.

(T. H. Järvi.)

The yield of the salmon fishery in 1950 was very good especially of young fish from the Bothnian Sea.

Material for scale analysis was collected from the Oulu River (at the town Oulu) but has not yet been analysed.

Fry (a gift from Sweden) were liberated this year in the River Kokemäki.

France.

(R. Vibert.)

1. Recherches Physiologiques et Biologiques.

Les recherches entreprises sont poursuivies. Une première série de résultats ont été publiés (voir paragraphe 4).

Les travaux de marquage prévus n'ont pu encore être réalisés en 1950, les marques hydrostatiques commandées en 1946 n'étant parvenues que quelques jours après la fin de la migration d'avalaison des smolts.

2. Propagation Artificielle du Saumon.

Faible récolte d'œufs en 1949—50 et 1950—51 (50,000) les niveaux d'eau ayant été défavorables.

3. Prises de Saumon.

Relativement peu importantes en 1950, les rivières ayant été assez fortes pendant tout le printemps. En revanche, dans l'Adour, nombreux géniteurs sur les frayères.

4. Publications.

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Fontaine, M., O. Callamand et R. Vibert. 1950: La physiologie du saumon. Ann. St. Centr. Hydrob. App. III, pp. 15—26.

Fontaine, M. et R. Vibert. 1950: Sur un parr de saumon hermaphrodite parvenu à maturité sexuelle. Journ. Cons. Vol. XVI, no. 2, pp. 216—226.

Vibert, R. 1950: La régression du saumon du Rhin. Bull. Fr. Pisc. no. 156, pp. 131—134.

— 1950: Recherches sur le saumon de l'Adour — âge — croissance — cycle génétique — races. (thèse). Ann. St. Centr. Hydrob. App. III, pp. 27—149.

Fontaine, M. et J. Hatey. 1950: Sur la teneur en glycogène du foie de saumon (*Salmo salar* L.) adulte à diverses étapes de sa migration. C. R. Soc. Biol., t. 144, p. 788.

— — 1950: Variations de la teneur du foie en glycogène chez le jeune saumon (*Salmo salar* L.) au cours de sa 'smoltification'. C. R. Soc. Biol., t. 144, p. 953.

Fontaine, M. et J. Leloup. 1950: Sur l'iodémie de deux téléostéens migrateurs potamotoques, *Salmo salar* L. et *Alosa alosa* L. au début de leur montée reproductrice. C. R. Ac. Sc., t. 230, p. 775.

— — 1950: L'iodémie du saumon (*Salmo salar* L.) au cours de sa migration reproductrice. C. R. Ac. Sc., t. 230, p. 1216.

— — 1950: L'iodémie du jeune saumon (*Salmo salar* L.) en eau douce. C. R. Ac. Sc., t. 231, pp. 169—171.

Fontaine, M. et A. Raffy. 1950: Le facteur hypophysaire de retention d'eau chez les Téléostéens. C. R. Soc. Biol., t. 144, p. 6.

Fontaine, M. et J. Koch. 1950: Les variations d'euryhalinité et d'osmorégulation chez les poissons. — Leurs rapports possibles avec le déterminisme des migrations. J. Physiol., t. 42, pp. 287—318.

Holland.

(G. J. Lienesch.)

During 1950 the salmon catch on the Rhine was again poor. Moreover a wave of phenol-containing water from one of the tributaries in Germany came down the river in the middle of July, poisoning a great number of mature salmon in both Germany and Holland; it brought salmon catching to an unusually early end.

An agreement has now been reached with regard to solving the problem of maintaining the purity of the Rhine water, but it must be understood that it takes many years before all difficulties are overcome.

The construction of a new canal between Bale and Strassbourg constitutes a new menace to the salmon stock. This canal will take its water from the Rhine, which gives rise to the possibility that the quantity of water on the spawning banks in the upper river may be inadequate.

Altogether I must conclude that the future for the Rhine salmon seems rather doubtful.

Iceland.

(Þór Guðjónsson).

Scale samples of salmon were collected for age analysis and growth studies as in previous years. Marking of smolts took place in the river Úlfarsá. 100 smolts were marked by cutting fins (the adipose and the left ventral) and 4 were tagged with hydrostatic tags. 199 kelts were tagged at two centres, 103 of them were tagged in the river Elliðaár and 96 in the river Stóra-Laxá in Árnessýsla-district. 258 young sea trout were marked on their seaward migration in the river Úlfarsá. Some preliminary experiments were done with electric fishing apparatus in the river Úlfarsá.

Hatchery operations were carried out at three centres.

The salmon catch was below average.

Ireland.

(A. E. J. Went.)

1. Biological Investigations.

During 1950 investigations were continued on a small scale into the age and growth of salmon from the River Shannon. In addition some progress was made with material relating to the salmon stocks of a large number of Irish rivers collected in the year 1946.

Salmon tagging was again carried out at 5 places on the Irish coast. Tagging was repeated at Achill at the 3 stations established in 1949. At 2 of these stations, Dooega and Keel, salmon were captured by means of bag nets and at the third station at Keem Bay draft nets were used for the capture of fish. The station established in 1949 at Baginbun in County Wexford in the south-east of Ireland was again operated and a bag net was used for the capture of salmon. A new station was established at Rath on the northern shore of Kenmare Bay.

The results from Achill were similar to those which were obtained in 1949 in that there was a movement of salmon for short distances in a southerly direction from the tagging stations but the main long distance migrations took place in a northerly direction. One fish tagged at Dooega was recaptured in the Conon river on the east coast of Scotland. Other recaptures were also made from the Achill taggings on the west coast of Scotland and one at Rhyl in North Wales.

The results from the fish tagged at Baginbun and released there indicated that the movements were in the main in a south and westerly direction. Only 2 fish were recaptured in the River Slaney but no recaptures were made in the River Lee, as was the case in the previous year.

2 fish tagged at Rath were recaptured a few miles to the north of the tagging station and the remainder were recaptured in rivers flowing into Kenmare and Bantry Bay and to the River Ilen near Skibbereen.

In conjunction with the Ministry of Commerce, Northern Ireland, and the Ministry of Agriculture and Fisheries, England and Wales, salmon tagging was carried out at 2 places along the coast of Northern Ireland. Fish marked at the 2 tagging stations were recaptured at places along the Irish coasts from the Boyne to the Foyle. The catches were also made on the west coast of Scotland, on the east coast of Scotland (River Conon) and in the River Tweed.

Further progress was made in the investigations of the material relating to brown trout from a lake in the south-west of Ireland. During the year 2 schemes of research work were started into the stocks of brown trout in Irish lakes. The first scheme related to the removal of coarse fish such as pike, perch, rudd and bream. Attempts are being made to ascertain whether by removing a large proportion of such fish, stocks of trout could be established in the lakes in question. The second scheme of experimental work is to deal with the question of the addition of nutrients into certain acid lakes in order to ascertain the effects on the growth-rate of the contained stocks of brown trout.

Artificial Propagation of Salmon and Trout.

Hatchery operations were again carried out at a large number of centres during the year 1950. Unfortunately the adverse weather conditions prevented the capture of spawning or parent fish in many places so that the output is likely to be somewhat lower than the previous year. For the third time in succession imported ova were obtained from Great Britain.

Returns of Catches.

Returns of catches were demanded from every holder of a licence to fish for salmon in 1950 and these returns are now being compiled. The figures for 1949 which are now available indicate that the catch in that year was approximately 930,000 kilograms or slightly greater than the catch of 1948. As mentioned in my previous reports the export figures published monthly by the Department of Industry and Commerce give some idea of the relative abundance of salmon in this country. In 1950 exports amounted to approximately 880,000 kilograms compared with 884,000 kilograms in 1949 and 887,000 in 1948.

Norway.

(Leiv Rosseland.)

As in previous years, the salmon and trout research in 1950 mainly consisted of the marking and tagging of fish, sampling of stomach and sexual organs, and counting of upstream and downstream migrants in the two research rivers, the Istra and the Sandviken rivers.

In the **Sandviken** river, all upstream migrants were counted in the fishladder at Frantzefoss, about 3 km. from the river mouth, from the end of July to November 1949, in which period 1150 sea trout and 18 salmon went up. All of them were tagged. As the flow of the river generally was below normal, the fish mainly migrated when the river rose during periods of rain. In the course of the 1949 season 44 of the tagged sea trout and one salmon were recaptured. So far this year (end of May 1951) a further (122) sea trout have been recaptured (in addition to those controlled in the trap). Thus, of the upstream migrants in 1949, about 15 per cent. of the sea trout have so far been recaptured.

In the spring of 1950 the river was again controlled as for downstream migrants. For practical reasons this cannot be performed until after the spring flood which is fed by the melting snow, so that migrants during the flood escape counting. After the trap was set, however, the first migrants did not appear until

a long time after the spring flood. From 20. May til 12. June, 1506 young sea trout and 264 smolts were counted. 705 sea trout and 180 salmon smolts were marked by fin cutting. Salmon smolts in the Sandviken river seem mostly to migrate at an age of two years. The migration this season would thus mainly have been the result of the spawning in 1947, which was an extremely dry season. Throughout summer and autumn 1947 the flow of the river was so low that no salmon entered the river. Sea trout, however, entered in large numbers. Therefore, in 1947, no natural spawning of salmon took place. In spring 1948, however, 15—20,000 salmon fry were liberated from a hatchery. The unusually low number of salmon smolts in 1950 seems to correspond well with the lack of natural propagation in 1947, and the artificially hatched fry seem to have had a poor survival.

From the end of July 1950 the river has again been controlled by a trap in the salmon ladder at Frantzefoss. All upstream migrants have been measured, but only a small number tagged. The river flooded twice this season to such an extent that, for short periods, control was impossible. In spite of this, 2,324 sea trout and 51 salmon passed the trap.

In the **Istra** river the trap was set so late that counting of the 1949 run could not be performed. The seaward migration in 1950 was, however, almost completely covered. During the period from the end of April to 1. July, 458 larger sea trout and two salmon came down. They were all tagged. Of these, so far, 67 or approximately 15 % have been recaptured (apart from those controlled in the trap). During the period 5. May to 7. June, 2,692 young sea trout and 75 salmon smolts were caught. They were all marked by fin cutting. 532 young sea trout perished on the screens. Upstream migrants were counted during the summer and autumn.

In the **Lærdal** river, 103 salmon kelts and 47 spent sea trout were tagged while on their seaward migration in the middle of April 1950. So far 9 sea trout (19 %) and 3 salmon have been recaptured. Two of these salmon were found dead, one in the river, the other half way out of the Sognefjord; the third was caught in a bag-net in the Sognefjord.

In the previous season (1949), 35 salmon kelts were tagged in the same river. Three were recaptured during the same season and one has been reported this season.

In the **Lier** river, 66 spawning sea trout were tagged in the fall of 1949. During the 1950 season, 11 of them were recaptured (15.5 %). In the fall of 1950, 50 sea trout were tagged at the same place, none of them have been recaptured so far.

At **Os,** near Bergen and **Jondal,** Hardanger, 352 small freshwater trout were tagged and transferred to the sea during May and the first days of June 1950. So far 41 have been recaptured (11.6 %). They have shown fair growth.

In the **Aurland** river, Sogn district, 30 sea trout and 18 salmon were tagged in the fall of 1949, after having been stripped for the hatchery. Eight sea trout (26.6 %) and no salmon have been recaptured. In the same river 32 sea trout and 4 salmon were tagged in the fall of 1950. None of them have been recaptured so far.

In the **Figgen** river near Stavanger, 25 salmon kelts were tagged during their seaward migration in March 1950. One of them was recaptured in the same river in the beginning of May 1950.

At **Grimstad** (south coast) 75 sea trout, stripped for a hatchery, were tagged in the autumn of 1949. Six were recaptured during the 1950 season (8.5 %).

As in previous seasons two coastal stations were operated for the tagging of clean salmon in the sea, viz., the Kinn and the Titran stations. At **Kinn** 97 salmon were tagged and 63 recaptured (65 %). Of these, 15 were recaptured in rivers and 3 in river mouths. This is a remarkably high percentage of river recaptures, constituting 28.5 % of the total recovery. Otherwise the distribution of recaptures along the coast was much the same as in previous seasons.

At **Titran,** 99 salmon were tagged and so far 47 recaptures have been reported (47 %). Eleven of these came from lakes and rivers, also a high figure compared with earlier results. For Titran also, the distribution of the recaptures was much as in previous seasons, except that there were more northern recaptures than usual.

Scotland.

(K. A. Pyefinch.)

Though the scheme of salmon research on Forss Water (Caithness), which had been started again in April, 1949, formed the major item in the salmon investigations carried out during 1950, work on this river had to be discontinued in September, 1950, and plans are now being made to begin work again elsewhere.

During the period that work was in progress on the Forss, two traps were in commission. The Forss Bridge trap was in operation as in 1949 and the trap near Crosskirk Bay was brought into operation early in the year. During the period January to September, 375 salmon were passed through the Crosskirk Bay trap but only 38 fish passed through the trap at Forss Bridge, just over a mile upstream. Low water prevented the passage of fish up Forss Falls (which lie just below the Forss Bridge trap) for long periods during the summer, and this factor played a part in causing this considerable discrepancy, but the most import factor was a severe outbreak of furunculosis which reached epidemic proportions among the fish confined below Forss Falls. This disease reached its peak in May, when 122 dead fish were recorded. Floods again interfered with the census of the smolt run and, though the total marked or tagged (2180) was very similar to that marked in 1949, it again only represented a fraction of the total run.

A number of returns of fish, which had been marked as smolts in 1949, were recorded. Altogether records

were obtained of 26 grilse; 24 of these were taken either in the Crosskirk Bay sweep nets or in the Crosskirk Bay trap and of the remaining 2, one was taken in the near-by Thurso River and the other recaptured in the sea nets at Gourdon, on the east coast of Scotand. A return of 23 fish represents 1.3 % of the numbers of smolts marked.

Though work has ceased on the Forss, arrangements are being made to obtain records of returns of fish which were marked or tagged on this river in 1949 and 1950.

The kelt tagging experiment, carried out on the River Dee (Aberdeenshire) during November and December, 1949, provided no records of returns of salmon after a further period in the sea, though the return of a single sea trout was recorded.

A similar kelt tagging experiment was carried out on the River North Esk, during which 84 fish were tagged. 8 of these were recovered during their seaward migration and there was one record of a fish returning after a period at sea.

Salmon tagging at sea was resumed during 1950, when these operations were carried out at a netting station situated a few miles to the north of Montrose. 223 fish were tagged between 29. April and 29. July, of which 81 were recaptured in fresh water. 37 of these 81 fish had entered the rivers near the tagging site, but the remaining 44 had migrated to more distant rivers. Of these longer-distance migrants, 39 had moved northwards and only 5 had moved southwards. A preliminary report on this experiment has already been submitted to the Salmon and Trout Committee.

The 1949 kelt tagging experiment on the River Dee was repeated in 1950, when 343 salmon kelts and 105 sea trout kelts were tagged. Recoveries during the downstream migration have been far fewer than in the preceding year; up to the end of February records of the recovery of 34 salmon kelts and 1 sea trout kelt had been obtained.

The work carried out by the Brown Trout Research Laboratory has now passed beyond the stage of preliminary exploration which was the main theme of the research projects attempted during 1949 and the appointment of additional staff has enabled the scope of the researches to be widened. In particular, work on the chemical environment has now begun properly and though it has first been necessary to devote much attention to the development of methods of analysis which are adequate for the particular characteristics of the waters to be tested, much of this has been completed and time is now available for work on the more fundamental aspects of the chemistry of freshwaters.

Routine observations and records of trout have been maintained and a number of special investigations have been started. In particular, studies of the behaviour of alevins after hatching have given an interesting picture of the reactions of this stage and give indications of the factors which make for its survival; these studies have been based on field observations but have been supplemented by laboratory investigations. Work has also been started on the digestive processes of trout and analysis of the routine records of stomach contents have revealed the existence of associated groups of food organisms within the stomach which suggest some of the factors which may control the trout's choice of food.

Observations on the seasonal changes in the composition of the bottom fauna have been maintained and though it is clear that routine observations of this kind must continue to be made, work on this section of the freshwater community is also becoming more specialised. Information on the biology of a number of important species is being slowly accumulated and work has been started on the food of members of the bottom fauna and on the relationships between this fauna and the plankton.

The general plankton surveys mentioned in last year's report were completed in December, 1950 and during the year detailed surveys of the plankton of four lochs in the district were started. The bottom fauna, fish populations and the chemistry of these lochs is also being studied in some detail. These surveys are the first stage in field fertilisation investigations.

These main investigational lines have been supplemented by a number of minor studies, e. g. further field work on the effects of rotenone and a botanical survey of the area to be inundated in the formation of the Errochty Reservoir. Though no further experimental work has been carried out on electrical methods of catching fish this topic will receive much more attention during 1951 as a comprehensive programme of experiments has been drawn up, in collaboration with the Electrical Research Association, the Ministry of Agriculture and Fisheries and the Freshwater Biological Association.

Sweden.

(Jöran Hult.)

As in previous years, most of the investigations were carried out by the Migratory Fish Committee in close cooperation with the Board of Fisheries and Fishery Research. The results of these investigations will be published in the "*Annual Report*" from the Institute of Freshwater Research, Drottningholm.

The studies of hatching and rearing methods have been continued and improved results have, in some cases, been obtained. But close attention has to be paid to the fish diseases. Salmon reared to the smolt stage, 2—4 years old, have been released at the coast of the Bothnian Sea, in four rivers in the north and in one river in the south-west part of Sweden.

The transports of salmon past power-houses on four different rivers were continued with good results, the ensuing parr showing good growth.

Another electrical photocell recorder was set up in yet another river so that there are now six recorders in use in six rivers.

The tagging of salmon used for artificial propagation

was continued and we now have a fair knowledge of the migratory routes in the Baltic of the kelts from the middle part of north Sweden. To collect data concerning the migratory routes of the salmon from the northernmost rivers, small salmon (under minimum size) were tagged on the coast of the Bothnian Gulf.

The stripped salmon from the Ume river hatchery were transported to and released in the mouth of the river. This has, to a noticeable extent, given increased recaptures in the Baltic. The increased returns seem to more than justify the expenses of the transport. Some of the stripped salmon released in November were caught again ascending the river some days later.

The passage of smolt through turbines at two power-houses was studied.

Salmon scales were collected in different rivers and in the Baltic and it seems that there is a good stock of small salmon in the sea in spite of the intense salmon fishery employing especially floating long-lines.

The cooperation between the Scandinavian countries in the salmon research was continued, meetings being held in Norway and Sweden.

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